

Final

Site Management Plan

Fiscal Years 2003 through 2008

St. Juliens Creek Annex
Chesapeake, Virginia



Prepared for

Department of the Navy
Atlantic Division
Naval Facilities Engineering Command
Norfolk, Virginia

Contract No. N62470-95-D-6007
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Prepared by

CH2MHILL

Baker
Environmental, Inc.

CDM
Federal Programs Corp.

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Herndon, Virginia

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Acronyms and Abbreviations

ABM	Abrasive Blast Media
AOC	Area of Concern
bgs	Below Ground Surface
BERA	Baseline Ecological Risk Assessment
BTAG	Biological Technical Assistance Group
CERCLA	Comprehensive Environmental Response Compensation and Liability Act
CLEAN	Comprehensive Long-Term Environmental Action
CTO	Contract Task Order
Cy	Cubic Yards
DD	Decision Document
DOD	Department of Defense
DRMO	Defense Reutilization and Marketing Office
EE/CA	Engineering Evaluation/Cost Analysis
EM	Electromagnetic
EOD	Explosive Ordnance Disposal
EPIC	Environmental Photographic Interpretation Center
ERA	Ecological Risk Assessment
ERS	Ecological Risk Screening
FFA	Federal Facilities Agreement
FS	Feasibility Study
FY	Fiscal Year
HHRA	Human Health Risk Assessment
HHRS	Human Health Risk Screening
HRS	Hazard Ranking Scoring
IAS	Initial Assessment Study
IR	Installation Restoration
IRI	Interim Remedial Investigation
IRP	Installation Restoration Program
LANTDIV	Atlantic Division of the Navy
µg/L	Micrograms per Liter
MCL	Maximum Contaminant Level
mg/kg	milligrams per kilogram
NACIPNavy	Assessment and Control of Installation Pollutants
NFA	No Further Action
NPL	National Priorities List
NTCRA	Non-Time Critical Removal Action

PA	Preliminary Assessment
PAHs	Polycyclic Aromatic Hydrocarbons
PCBs	Polychlorinated Biphenyls
ppb	parts per billion
PRAP	Proposed Remedial Action Plan
PWC	Public Works Center
RA	Remedial Action
RBCs	Risk Based Concentrations
RCRA	Resource Conservation and Recovery Act
RD	Remedial Design
RFA	RCRA Facility Assessment
RFI	RCRA Facility Investigation
RI	Remedial Investigation
ROD	Record of Decision
RRR	Relative Risk Ranking
SARA	Superfund Amendments and Reauthorization Act
SIMA	Shore Intermediate Maintenance Activity
SI	Site Inspection/ Site Investigation
SJCA	St. Juliens Creek Annex
SMP	Site Management Plan
SRI	Supplemental Remedial Investigation
SSA	Site Screening Assessment
SVOC	Semivolatile Organic Compound
SWMU	Solid Waste Management Unit
TAL	Target Analyte List
TCL	Target Compound List
TNT	Trinitrotoluene
TOC	Total Organic Carbon
TPH	Total Petroleum Hydrocarbons
USEPA	United States Environmental Protection Agency
UST	Underground Storage Tank
UXO	Unexploded Ordnance
VDEQ	Virginia Department of Environmental Quality
VOC	Volatile Organic Compound
VSI	Visual Site Inspection

1 Introduction

This document presents the Site Management Plan (SMP) for St. Juliens Creek Annex (SJCA) for fiscal years (FY) 2003 through 2008. SJCA is located in Chesapeake, Virginia (Figure 1-1). The SMP meets the requirements that the Atlantic Division of the Navy (LANTDIV) has entered into with Region III of the United States Environmental Protection Agency (USEPA) under the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) to address environmental contamination at applicable sites at SJCA. The SMP is being submitted for use by the SJCA Installation Restoration (IR) Partnering Team and their respective organizations (LANTDIV, SJCA, USEPA, and the Virginia Department of Environmental Quality [VDEQ]).

1.1 Purpose

The purpose of the SMP is to provide a management tool for LANTDIV, SJCA, VDEQ and USEPA personnel and consultants to be used in planning, scheduling, and setting priorities for environmental remedial response activities to be conducted at SJCA under the CERCLA. The SMP establishes schedules and conceptual approaches and scopes of work that USEPA, VDEQ and the Navy have agreed to. The schedules and work descriptions consist of:

- Detailed schedules, near-term milestones, and descriptions of proposed activities for the current FY.
- Conceptual schedules and general work approaches for activities planned for FY 2003 through FY2008.

The prioritization of activities and the proposed schedules were developed by the SJCA IR Partnering Team and are based on several factors:

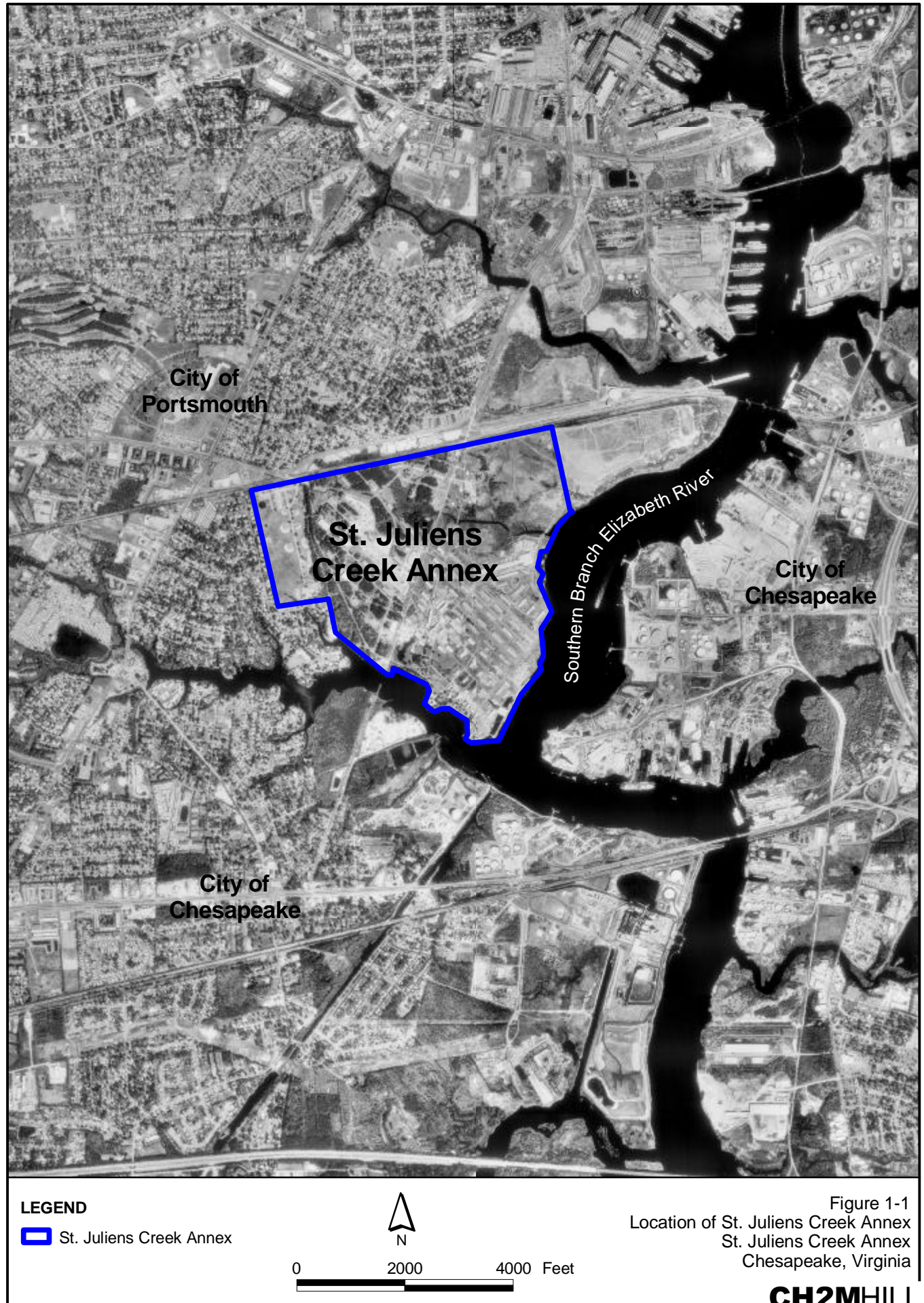
- The Partnering Team's relative ranking of the sites with regard to the potential risks that they may pose to human health and the environment (i.e., address high risk sites first).
- LANTDIV's internal funding goal of having remedies in place at all "high" priority sites by FY 2005.
- Goals set by the Partnering Team to meet requirements of USEPA, VDEQ, LANTDIV, SJCA, and the public.

The SMP is a working document that is updated yearly to maintain up-to-date documentation and summary of environmental actions at SJCA. This SMP updates and supercedes the FY 2000 through 2001 SMP prepared by CDM Federal, Inc. in July 2000 (CDM, 2000).

1.2 SMP Report Organization

This SMP consists of six sections. This section establishes the purpose of the SMP. Section 2 presents a brief history of environmental activities at the base and describes each of the sites at SJCA that are currently being considered for inclusion in the Federal Facilities Agreement (FFA). Section 3 presents the proposed scope of work at each site where activities will be conducted during FY 2003. Section 4 presents 5-year schedules for environmental

investigation and remediation activities at those sites where activities are currently planned for FY 2003 through 2008. Section 5 summarizes planned and potential remedial and removal actions for SJCA. References are provided in Section 6.



2 Site Background

The SJCA facility is situated at the confluence of St. Juliens Creek and the Southern Branch of the Elizabeth River in the city of Chesapeake, located in southeastern Virginia (Figure 1-1). The facility covers approximately 490 acres and includes administrative buildings, wharf areas to the Southern Branch of the Elizabeth River, a central heating plant, numerous non-operational industrial facilities, a radar testing range, and miscellaneous structures including a housing area.

The facility is bordered to the north by the Norfolk and Western Railroad, the City of Portsmouth, and residential areas; to the west by residential areas; to the south by St. Juliens Creek; and to the east by the Southern Branch of the Elizabeth River (Figure 1-1). The Norfolk Naval Shipyard is located approximately 1.5 miles to the north.

St. Juliens Creek Annex began operations as a naval ammunition facility in 1849. In the past, operations at SJCA have included general ordnance operations involving wartime transfer of ammunitions to various other U.S. Naval facilities throughout the United States and abroad. In addition, the Annex has been involved in specific ordnance operations and processes including those involving black powder operations, smokeless powder operations, projectile loading operations, mine loading, tracer mixing, testing operations, and decontamination operations.

St. Juliens Creek Annex has also been involved in non-ordnance operations, including degreasing operations, paint shops, machine shops, vehicle and locomotive maintenance shops, pest control shops, battery shops, print shops, electrical shops, boiler plant operations, wash rack operations, potable and salt water fire protection systems, and fire training operations. Many of these operations have been discontinued, such as locomotive maintenance, printing, and pest control.

Activity at SJCA has decreased in recent years. The current primary mission of SJCA is to provide a radar testing range and various administrative and warehousing facilities for nearby Norfolk Naval Shipyard and other local Naval activities. St. Juliens Creek Annex also provides administrative offices, light industrial shops and storage facilities for tenant naval commands.

Materials stored at SJCA have included oil, ordnance materials, non-ordnance chemicals, and disaster preparedness chemicals. Various parts of the facility are used to store small amounts of waste before transfer to accumulation points.

2.1 Environmental History

In 1975, the Department of Defense (DOD) began a program to assess past hazardous and toxic materials storage and disposal activities at military installations. The goals of this program, now known as the Installation Restoration Program (IRP), were to identify environmental contamination resulting from past hazardous materials management practices, to assess the impacts of the contamination on public health and the environment,

and to provide corrective measures as required to mitigate adverse impacts to public health and the environment.

In 1976, the Resource Conservation and Recovery Act (RCRA) was passed by Congress to address potentially adverse human health and environmental impacts of hazardous waste management and disposal practices. RCRA was legislated to manage the present and future disposal of hazardous wastes. In 1980, the CERCLA, or “Superfund”, was passed to investigate and remediate areas contaminated from past hazardous waste management practices. These programs are administered by the USEPA or state agencies.

In 1981, the DOD’s IRP was re-issued, with additional responsibilities and authorities specified in CERCLA delegated to the Secretary of Defense. The Navy subsequently restructured the IRP to match the terminology and structure of the USEPA CERCLA Program. The current IRP is consistent with CERCLA and applicable state environmental laws.

St. Juliens Creek Annex was listed on the USEPA National Priorities List (NPL) in August 2000. The Navy acts in partnership with the USEPA and VDEQ to address environmental investigations at the facility through the IRP. The Navy is currently preparing a FFA for use among the Navy, the USEPA, and the VDEQ. Under the FFA, all past and future work at IR sites, solid waste management units (SWMUs), and Areas of Concern (AOCs) will be reviewed and a course of action for future work requirements at each site will be developed. The FFA will include specific requirements for the preparation and contents of the SMP.

The following sections provide an overview of the CERCLA process and a summary of the major studies completed to date at SJCA. Table 2-1 lists studies, investigations, and actions completed to date at each site.

2.1.1 CERCLA Process

The CERCLA remedial investigation/feasibility study (RI/FS) process refers to the process of site investigation and remedial action that is used for CERCLA sites. The CERCLA RI/FS process will be followed where noted for the sites addressed by this SMP.

The objectives of the CERCLA process are to evaluate the nature and extent of contamination at a site, and to identify, develop, and implement appropriate remedial actions in order to protect human health and the environment. The major elements of the CERCLA process are:

- Remedial Investigation (RI),
- Feasibility Study (FS),
- Proposed Plan and Record of Decision (ROD),
- Remedial Design and Remedial Action (RD/RA), and
- Post-Remedial Action Monitoring and Reporting.

The documents prepared for the program are maintained in information repositories for review by the public. A formal public comment period and a public meeting (if required) generally occurs at the remedy selection step (Proposed Plan and ROD). Public comments received are addressed as part of the responsiveness summary in the ROD. Subsequent to the public comment period, RD/RA activities are initiated.

At times some sites warrant preliminary or interim investigations, studies, or removal/remedial actions. If it is unclear as to whether a site should be included in the CERCLA RI/FS process, a Preliminary Assessment, Site Screening Process, or Site Investigation (SI) is sometimes conducted to make a general determination if activities at the site have impacted environmental media.

Removal actions are implemented to clean up or remove hazardous substances from the environment at a specific site in order to mitigate the spread of contamination. Removal actions may be implemented at any time during the CERCLA process.

Removal actions are classified as either time-critical or non-time-critical. Actions taken immediately to mitigate an imminent threat to human health or the environment, such as the removal of corroded or leaking drums, are classified as time-critical removal actions. Removal actions that may be delayed for 6 months or more without significant additional harm to human health or the environment are classified as non-time-critical removal actions (NTCRAs).

For NTCRAs, an Engineering Evaluation/Cost Analysis (EE/CA) is prepared to assess removal action alternatives. An EE/CA focuses only on the substances to be removed rather than on all contaminated substances at the site. It is possible for a removal action to become the final remedial action if the risk assessment results indicate that no further remedial action is required in order to protect human health and the environment.

Interim remedial actions are implemented to provide temporary mitigation of human health risks or to mitigate the spread of contamination in the environment. Similar to removal actions, they may be implemented at any time during the process. Examples of interim remedial actions include installing a pump-and-treat system for product recovery from the groundwater or installing a fence to prevent direct contact with hazardous materials.

For interim remedial actions, a focused FS is prepared rather than the more extensive FS. As with the removal action, an interim remedial action may become the final remedial action if the results of the risk assessment indicate that no further remedial action is required in order to protect human health and the environment.

Treatability studies are performed to assist in the evaluation of a potentially promising remedial technology. The primary objectives of treatability testing are:

- To provide sufficient data to allow treatment alternatives to be fully developed and evaluated during the FS, and
- To support the remedial design of a selected remedial alternative.

Treatability studies may be conducted at any time during the process. The need for a treatability study generally is identified during the FS.

Treatability studies may be classified as either bench-scale (laboratory study) or pilot-scale (field studies). For technologies that are well-developed and tested, bench-scale studies are often sufficient to evaluate performance. For innovative technologies, pilot tests may be required to obtain the desired information. Pilot tests simulate the physical and chemical parameters of the full-scale process, and are designed to bridge the gap between bench-scale and full-scale operations.

2.1.2 Initial Assessment Study (IAS)

In 1981, the Navy conducted the IAS as part of the Naval Assessment and Control of Installation Pollutants (NACIP) Program (NEESA, 1981). The purpose of the IAS was to identify and assess sites that posed a potential threat to human health or the environment because of contamination from past handling of and operations involving hazardous materials. Results of this study revealed that low level concentrations of ordnance materials exist throughout the facility. However, the sites identified were determined not to pose a threat to human health and the environment, and no confirmation study was conducted.

2.1.3 Preliminary Assessment (PA)

In 1983, NUS Corporation, Superfund Division (NUS), conducted a PA at seven sites at the facility. These sites comprised:

- Cross and Mine (Solid Waste Management Unit [SWMU] 9 [renamed Site 8]);
- Building 249 (SWMU 13);
- Dump A (SWMU 1 [renamed Site 1]);
- Dump B (SWMU 2 [renamed Site 2]);
- Dump B Incinerator (SWMU #3 [included with Site 2]);
- Dump C (SWMU #5 [renamed Site 3]); and
- Dump D (SWMU #6 [renamed Site 4]).

Ambient air at each site, including Sites 3 and 4, was monitored for volatile organic compounds (VOCs) and radiation with an organic vapor meter and radiation meter, respectively. No readings above background were encountered and NUS did not observe significant signs of contamination at the sites. However, the PA report mentioned that various locations on the facility were contaminated with low level residues of pesticide and herbicide materials.

2.1.4 Phase II RCRA Facility Assessment (RFA)

In 1989, A.T. Kearney, Inc. and K.W. Brown and Associates, Inc. prepared a Phase II RFA. The RFA included a preliminary review of all available relevant documents and a visual site inspection (VSI) for 34 SWMUs and 12 Areas of Concern (AOCs). No sampling was conducted during the RFA (A.T. Kearney, Inc., 1989).

RCRA Facility Investigations (RFIs) were recommended at eleven of the SWMUs and AOCs. Nine other sites were identified for sampling to determine if a release occurred at those sites (A.T. Kearney, Inc., 1989). In addition, the Navy identified soil staining at another area for investigation, bringing the total number of sites warranting some level of investigation to 21.

2.1.5 Relative Risk Ranking (RRR) System Data Collection Report

In April 1996, CH2M HILL submitted to the Department of the Navy a RRR System Data Collection Report for the SJCA. The report contained results from sampling conducted at 21 sites at the Annex where no sampling data had previously been available. The goal of the sampling effort was to gather data for the Navy to perform assessments of the sites using the Navy's RRR System (CH2M HILL, 1996).

2.1.6 Environmental Photographic Interpretation Center (EPIC) Study and Regulatory Review

In 1995, USEPA conducted a review of historical aerial photographs in the Norfolk area (USEPA, 1995). Twelve potential AOCs were identified for investigation during a joint USEPA, VDEQ, and Navy review of historical aerial photography (EPIC Study) of the facility in June 1999. In November 1999, a work-in progress/site visit with representatives of the Navy, CDM Federal, VDEQ, and the biological technical assistance group (BTAG) was conducted to evaluate the twelve “EPIC AOC” locations (EPIC AOCs 1 through 12). A review of the current and past conditions of each of the twelve “EPIC AOC” locations was also conducted using the EPIC photographs to determine if sampling was warranted at any of the locations. Further desktop review and site visits were conducted by the SJCA Partnering Team in 2001 and EPIC AOCs 2 through 12 were recommended for no further action.

2.1.7 Hazard Ranking Scoring (HRS) Field Investigation

Surface water and sediment samples were collected from Blows Creek in the vicinity of Site 1 (Waste Disposal Area A) as part of the HRS field investigation conducted in 2000 (Tetra Tech, 2000). The sample descriptions indicated that the downstream sample collected closest to the site was “black sand” while other samples both upstream and downstream of the site had components of silt and organic material.

2.1.8 Technical Memorandum Findings of Expanded Site Inspection of Site 17 (Building 278/279)

Four surface soil samples were collected and analyzed as part of an Expanded Site Investigation conducted in 2001 to determine if Site 17 requires further investigation (CH2M HILL, 2001a). Several polycyclic aromatic hydrocarbons (PAHs) and metals were present above background concentrations and human health and ecological screening values. The site inspection concluded that Site 17 may pose a risk to human health and the environment. It was recommended that an additional investigation be conducted to define the vertical and horizontal extent of contaminants and better define any potential risk at Site 17.

2.1.9 Background Investigation Report

A soil and groundwater background study was conducted in 2001 (CH2M HILL, 2001b). The objective of the investigation was to establish background concentrations of metals, pesticides, and PAHs in surface and subsurface soil, and groundwater for use in comparison to IRP site data to better identify site-related constituents of concern. Background levels are due to naturally occurring (those chemicals expected at a site in the absence of human influence) or anthropogenic (chemicals that are present in the environment due to man-made, non-site related sources) sources.

2.1.10 Site Screening Assessment Report

A Site Screening Assessment (SSA) was finalized in April 2002. The SSA covered eight sites (Sites 1, 8, 10, 11, 18, 19, 20, and 21) and 12 AOCs (CH2M HILL, 2002a). The sites were originally identified during the RFA (A.T. Kearney, Inc., 1989). The EPIC AOCs were identified during the joint USEPA, VDEQ, and Navy review of historical facility aerial

photographs (EPIC Study) in June 1999. The SSA recommended further investigation at five of the sites/ AOCs (Sites 1, 8, 19, and 21 and AOC 1) to determine if a release had occurred and if a RI was warranted for the sites (CH2M HILL, 2002a). The Navy in partnership with the USEPA and VDEQ determined no further action (NFA) was required for the remaining sites.

2.1.11 Remedial Investigation for Sites 3, 4, 5, and 6

An RI for Sites 3, 4, 5, and 6 was completed in August 2002 and included human health and ecological risk assessments (CH2M HILL, 2002c). Surface and subsurface soil, shallow (Columbia Aquifer) and deep (Yorktown Aquifer) groundwater, sediment, and surface water samples were collected and analyzed to characterize the nature and extent of contaminants and potential human health and ecological risks posed by contaminants at each site. Geophysical surveys and trenching were used to identify the boundaries, extent of waste, and anomalies at several of the sites (CH2M HILL, 2002c).

The human health risk assessment (HHRA) found potential hazards and risks above USEPA target levels associated with potential exposure to metals if deep groundwater beneath the sites is used as residential potable water supply and/or the sites are used for future residential development. Groundwater is not used as a potable source at the facility. Groundwater downgradient of the sites discharges to Blows Creek and the Southern Branch of the Elizabeth River, where concentrations are expected to be less than those detected onsite, decreasing risk levels (CH2M HILL, 2002c).

The ecological risk assessment (ERA) found potential adverse effects to terrestrial receptors including lower trophic-level receptors (plants and soil invertebrates) and avian and mammalian vernivores. Presumptive remedies currently under consideration consist of soil cover and/or removal of contaminated media and will reduce chemical concentrations to levels that do not pose unacceptable risks to these receptors and further investigation of potential risks to terrestrial receptors is not warranted (CH2M HILL, 2002c).

Chemicals present in drainage sediments at all these sites have the potential to adversely affect aquatic life. Chemicals present in surface water (primarily inorganic chemicals) may also have limited potential to adversely affect aquatic life. There is no viable aquatic habitat in the upland drainage areas of these sites as they essentially remain dry except following storm events. The greatest potential for adverse effects would result if chemicals were transported via the ditches to Blows Creek, where a much greater diversity of aquatic species is expected to occur. Further evaluation of the potential for adverse effects to aquatic life in Blows Creek sediment is planned; a work plan for a Baseline Ecological Risk Assessment (BERA) of Blows Creek is currently in progress. The focus of the evaluation of Blows Creek is on the characterization of chemical concentrations in Blows Creek sediment, which would be the repository for potentially bioaccumulative chemicals (CH2M HILL, 2002c). Further consideration of potential risks to aquatic life resulting from chemicals in surface water will also be addressed in the BERA.

2.1.12 Engineering Evaluation/Cost Analysis for Sites 3 and 6

An EE/CA for a NTCRA for soil and sediment was completed in June 2002 for Sites 3 and 6 at SJCA (CH2M HILL, 2002b). The EE/CA was prepared in response to RI findings. The objective of the EE/CA was to design the removal of waste and mitigate potential risks

posed by the presence of physical and chemical wastes at Sites 3 and 6. The EE/CA evaluated several difference options for meeting these objectives. The selected action includes excavation (including unexploded ordnance [UXO] screening and removal) of visible burnt/stained soil and debris, as well as material posing a potential risk to human health and the environment; transport; and non-hazardous disposal of waste and debris in a local landfill. Following complete removal of waste and contaminated media posing a potential risk, the land comprising Sites 3 and 6 will have unrestricted land-use (CH2M HILL, 2002b).

2.2 Descriptions of Sites

2.2.1 Descriptions of Sites in the CERCLA SSA/SI/RI/FS Process

The following sections provide site-specific information for each of the IRP sites and the EPIC AOCs at SJCA. The status of each of the IRP sites is presented in Table 2-2. Locations of each site, SWMU, and EPIC AOC are shown in Figure 2-1. This figure also identifies which sites, SWMUs, and EPIC AOCs require further investigation under CERCLA.

2.2.1.1 Site 1—Waste Disposal Area A

Site 1 consists of a one-acre area east of the Dominion-Virginia Electric Power Company Right-of Way, west of a set of railroad tracks, and north of Building 146. The extent of waste disposal is unknown and site boundaries are approximate.

The waste disposal area was used from 1921 to 1924 primarily for the disposal of trash and garbage as reported in the RFA (A.T. Kearney, Inc., 1989). Pesticides, acids and bases were also reportedly disposed of at the site. It was reported that trash was burned at the site and the ashes used to fill the marsh area adjacent to Blows Creek. The estimated volume of disposed material prior to being burned was 30,000 cubic yards.

During the IAS (NEESA, 1981), no evidence of environmental contamination was noted. In 1983, NUS conducted a PA, which indicated that neither VOCs nor radiation was present in the air. During the relative risk ranking (RRR) data collection study, two surface soil and two groundwater samples were collected and analyzed for VOCs, semivolatile organic compounds (SVOCs), pesticides/polychlorinated biphenyls (PCBs), inorganics, and nitramines (CH2M HILL, 1996). DDT, DDE and several PAHs were detected in soil, and nitrobenzene was detected in the groundwater.

As part of the HRS Scoring Field Investigation conducted in 2000, surface water and sediment samples were collected from Blows Creek in the vicinity of the waste disposal area (Tetra Tech, 2000). The downstream sample collected closest to Site 1 was described as “black sand” while other samples both upstream and downstream of the site had components of silt and organic material. Since both fine-grained material and organic material have a greater tendency to adsorb contaminants, the dominance of sand in the downstream sample was considered to bias the sample toward lower concentrations of contaminants. Furthermore, the samples were collected during rising (incoming) tide, which could have prevented representative samples from being collected. Based on the evaluation of this data, it was determined that there appeared to be data gaps that should be addressed.

In February 2001 during investigations to support a SSA, four surface water and four sediment samples were collected from Blows Creek, north of Site 1, to address the data gaps identified during the HRS field investigation. The RRR and HRS results were used with the February 2001 results to conduct a HHRS and ERA as part of the SSA (CH2M HILL, 2002a). Human health and ecological risk screens determined that groundwater, sediment, and soil at Site 1 are not media of concern. The human health risk screening (HHRS), however, did recommend further evaluation of surface water to determine if inorganics in surface water are site-related or are related to background or reference conditions in Blows Creek. No further evaluation was found to be necessary based on the ecological risk screening (ERS). It was recommended that trenching activities be conducted to determine the limits of the waste disposal area and character of the waste.

In September 2002, three test pits were excavated at Site 1 and no evidence of waste was encountered. Consensus for NFA for Site 1 was reached by the SJCA Partnering Team based on RRR data and the test pit results in November 2002.

2.2.1.2 Site 2—Waste Disposal Area B

Site 2 is an unlined waste disposal area located at the corner of St. Juliens Drive and Craddock Street in the southwestern portion of the facility (Figure 2-1). The waste disposal area began operating in 1921. Initially, refuse was burned onsite and was used to fill an adjacent swampy area. In 1942, an incinerator was installed and replaced the open burning practices. The waste disposal area was closed sometime after 1947 (CDM, 1999).

Garbage, acids, and waste ordnance were reportedly disposed at Site 2. The total volume of waste prior to burning is reported to have been approximately 950,000 cubic feet (ft³). It is estimated that half of this waste was disposed of prior to 1942. Site 2 also contains blast grit from ship overhaul and repair operations. The dates of blast grit disposal are not known (CDM, 1999). In 1989, the site was also used for storage of heavy equipment and machinery, including storage of tools, tires, and machinery in sheds and trailers.

Site 2 is currently a swampy area covered with brush, trees, and grass (CDM, 1999). A water body directly connected to St. Juliens Creek is located in the center of Site 2. This inlet from the creek is tidally influenced and drains surface water from adjoining land, including Site 2, into the creek. Construction debris (concrete and brick), as well as abrasive blast media (ABM), are visible at the site.

During the RFA, a faint hydrocarbon odor was reported to be emanating from the ground and several abandoned motor vehicles were observed (A.T. Kearney, Inc., 1989). No samples were collected during the RFA. During the RRR data collection study, two surface soil and two groundwater samples were collected and analyzed for VOCs, SVOCs, pesticides/PCBs, inorganics, and nitramines (CH2M HILL, 1996). The soil samples were found to contain PCBs and various pesticides. The groundwater samples contained 2,4,6-trinitrotoluene, 1,3,5-trinitrobenzene and acetone.

An RI report for Site 2 is currently being prepared and will be submitted for regulatory review in FY 2003. RI field activities were completed at Site 2 in 2001. The RI field investigation activities included geophysical investigations, installation of monitoring wells, water-level monitoring, waste delineation, and the collection and analysis of surface and subsurface soil samples, groundwater samples, sediment samples, and surface water samples.

2.2.1.3 Site 3—Waste Disposal Area C

Site 3 waste disposal area covers approximately 2.1 acres in the northeastern corner of the Annex and is accessible by way of a patrol road. In earlier documents, Site 3 was referred to as “Dump C” or “Landfill C” and the areal extent of Site 3 was reported to be about 10 acres.

Site 3 was originally a mudflat where refuse was allowed to burn; the ash was then used to fill the area. The area is unlined. Operations began in 1940 and continued until 1970. After 1970, the area was graded level and covered with grass (CDM, 1999). Review of historical aerial photographs, interpreted by EPIC, indicate that prior to use as a disposal area, the site and much of the adjacent area had been used for placement of dredge spoil material (USEPA, 1995).

Refuse disposed at Site 3 included solvents, acids, bases, and mixed municipal waste. Prior to burning, the total volume of solvent, waste oil, and oil sludge disposed was estimated to be about 27,778 cubic yards. Salvageable materials were removed from the site each day, and once every two weeks the site was bulldozed for compaction and leveling (CH2M HILL, 2002c).

Two pits at Site 3 were reportedly used for disposal of oil and oily sludge, as well as for periodic burning. The locations of the waste disposal pit and waste disposal area were outlined based on historical aerial photographs taken in 1958, 1961, 1964 and 1970 and interpreted by USEPA (USEPA, 1995). As identified in the photographs, the disposal pits were located along the north side of the dirt road that crosses the site diagonally. USEPA also interpreted ground scarring along the road to be possible waste disposal areas (CDM, 1999).

A Waste Delineation Investigation was conducted in June 2001 to determine the extent of waste at Site 3. An interview was conducted on December 18, 2001 with former SJCA employees. The interviews and intrusive investigations conducted as part of the 2001 RI show that the extent of waste at Site 3 is substantially smaller than previously reported and the site was not an established landfill; the SJCA Partnering Team reclassified the site as a waste disposal area (CH2M HILL, 2002c).

A RI, HHRA, and ERA Report will be completed for Site 3 in FY 2003. The RI field investigation activities included geophysical investigations, installation of monitoring wells, water-level monitoring, and the collection and analysis of surface and subsurface soil samples, groundwater samples, sediment samples, surface water samples, and waste delineation. Debris and burnt/stained soil were visually identified within 30 inches of the ground surface at Site 3. The debris area was confined along the access road, which transects Site 3, with the majority of debris located on the north side of the road. Burnt or stained soil was limited to the north side of a gravel access road (CH2M HILL, 2002c).

The RI results indicated potential risks for exposure to soil and sediment in upland drainage ditches at Site 3. As a result, an EE/CA was prepared in June 2002. Removal actions took place in the last quarter of FY 2002 for Site 3 include excavation of visible burnt/stained soil and debris, as well as surrounding material posing a potential risk to human health and the environment; and transport; and non-hazardous disposal of waste and debris in a local landfill. Following complete removal of waste and contaminated media posing a potential risk, the land comprising Site 3 will have unrestricted use (CH2M HILL, 2002c).

There were no human health risk drivers associated with shallow groundwater or surface water. Human health risk drivers for deeper Yorktown Aquifer are arsenic and manganese. Arsenic was only detected in one unfiltered sample from the upgradient well during the most recent sampling event below the Maximum Contaminant Level (MCL), and manganese is below the USEPA Region III tap water risk based concentration (RBC). The Navy, USEPA, and VDEQ agreed risk management of groundwater is warranted with no further action. The ERA recommended further evaluation of the potential for adverse effects to aquatic life in Blows Creek sediment as a result of chemical transport from Site 3 and other nearby sites (CH2M HILL, 2002c).

2.2.1.4 Site 4—Landfill D

Site 4 covers an estimated 10 acres approximately 500 feet south of Site 3 (Figure 2-1). The areal extent of Site 4 was previously reported to be about 5 acres. A review of historical aerial photographs and site reconnaissance during the RI completed in 2001 show that the extent of Site 4 is greater than previously reported, extending west from the original site boundary.

Site 4 consisted of a series of unlined trenches and a landfill that reportedly operated from 1970 to 1981. However, the first trench was identified on a historic aerial photograph from 1961, well before the reported start date of 1970. The first trench was approximately 500 feet long and was located parallel to and north of Blows Creek. The original trench and other earlier trenches were filled with soil from subsequent trenches. The total number of trenches in use at Site 4 is not known (CDM, 1999).

Refuse disposed at Site 4 included drums of unknown wastes and PCBs. According to personnel at the Base Public Works Center (PWC), the PCBs most likely came from ballast containers for fluorescent light fixtures. It is not known whether or not these ballast containers were sealed units. The RFA indicated that several tanks with undetermined wastes were also once located in the area. Total disposal volumes are not known (CDM, 1999); however, the *Hazard Ranking System Documentation Record for St Juliens Creek Annex* estimated waste disposed in Site 4 to be approximately 1,500,000 cubic yards (Tetra Tech, 200).

A RI, HHRA, and ERA Report was completed for Site 4 in 2002. The RI field investigation activities included geophysical investigations, installation of monitoring wells, water-level monitoring, and the collection and analysis of surface and subsurface soil samples, groundwater samples, sediment samples, and surface water samples (CH2M HILL, 2002c).

RI results identified potential human health risks associated with metal concentrations in soil and sediment at localized areas within Site 4. Remedial alternatives such as removal of soil cover are under consideration for management of these risks and will be evaluated in the FS planned for FYs 2003 and 2004. There were no human health risk drivers associated with shallow groundwater or surface water. Human health risk drivers for deep groundwater are arsenic, iron, and manganese (CH2M HILL, 2002c).

The ERA recommended further characterization and evaluation of elevated mercury concentrations (greater than 6 mg/kg) detected in the Site 4 drainage sediments adjacent to Blows Creek.

2.2.1.5 Site 5—Burning Grounds

Site 5 consists of approximately 3 acres located east of Craddock Street in the northern portion of the facility (Figure 2-1). The site currently consists of an open field with the southwestern portion overgrown with phragmites. A significant portion of the south-central area of the site is covered with a layer of gravel. The area where burning is thought to have occurred was determined from aerial photographs and from interviews with a former employee present during past burning activities. It was determined during a waste delineation activity that the remaining unburned material was pushed to the north of the burning activities.

The exact start and closure dates of the Burning Grounds are unknown, although it is believed to have operated between the 1930s and 1970s where waste ordnance materials were disposed by open burning. In 1977, the ground surface at Site 5 was burned with straw, diced, and burned again in an effort to remediate the soil. One report stated that oil was mixed with the straw; however, a former Navy employee who was interviewed and who worked at the Burning Grounds stated that no oil was burned with the straw (CDM, 1999).

Wastes disposed at Site 5 included ordnance materials such as black powder (mixture of charcoal, nitrate, and sulfur), smokeless powder (nitrocellulose), Explosive D (ammonium picrate), Composition A-3 (contains RDX and wax), tetryl, trinitrotoluene (TNT), and fuses. Other wastes consisted of solvents, paint sludge, pesticides, and various types of refuse (CDM, 1999). The amount of ordnance disposed of varied from year to year and there is insufficient information to calculate waste volume.

A RI, HHRA, and ERA Report was completed for Site 5 in 2002. The RI field investigation activities included geophysical investigations, installation of monitoring wells, water-level monitoring, and the collection and analysis of surface and subsurface soil samples, groundwater samples, sediment samples, surface water samples, and waste delineation (CH2M HILL, 2002c).

Because Site 6 is in proximity to Site 5, RI investigation activities and the HHRA and ERA combined results from Sites 5 and 6. RI results identified potential human health risks associated with metals in soil and drainage area sediment. The highest concentrations of all compounds were detected in soil at Site 5, and Site 6 is included in the planned removal action with Site 3 as addressed in the Site 3 and 6 EE/CA. Remedial alternatives such as removal or soil cover are under consideration for management of these risks at Site 5 and will be evaluated in the FS planned for FY 2003. There were no human health risk drivers associated with shallow groundwater or surface water. Human health risk drivers for deep groundwater are arsenic, iron, manganese, and antimony (CH2M HILL, 2002c).

The ERA recommended further evaluation of the potential for adverse effects to aquatic life in Blows Creek sediment as a result of chemical transport from Site 5 and other nearby sites (CH2M HILL, 2002c).

2.2.1.6 Site 6—Small Items Pit

Site 6 was operated as part of the ordnance disposal operations at the Annex. It was located northeast of Site 5 and consisted of a 160 square foot pit with a cage over it. No date of operation of the pit was found in historical records. A review of historical aerial

photographs during the RI indicated that activities associated with Site 6 may have begun around 1949.

According to the RFA report, an unknown volume of small items, such as igniters and fuses, were burned in the pit. The 1989 RFA also reported that the Navy had filled in the pit “during recent years” (A.T. Kearney, Inc., 1989). Interviews with former employees indicate that small items were transported into a steel container via a conveyor belt for destruction. The container was estimated to be 8-feet wide by 20-feet long by 12-feet high. Geophysical investigations indicate potential buried remains of this container. Trenching investigations, however, did not confirm the geophysical findings. Currently, there is no surface evidence of the pit at Site 6, and the area is covered with grass (CH2M HILL, 2002c).

Due to its proximity to Site 5, this site was investigated with Site 5 during the RI completed in 2001. RI field investigation activities at Site 6 included a geophysical survey and the collection and analysis of surface and subsurface soil samples. No visual signs of waste or stained/burned soil were observed at Site 6; however, test pit debris (specifically pieces of concrete) may be the remains of the pit (CH2M HILL, 2002c).

The HHRA and ERA combined results from Sites 5 and 6. Site 5 and 6 RI results identified potential human health risks associated with metals in soil. However, the highest concentrations of all compounds were detected in soil at Site 5; therefore, the identified risks would be biased high as applied to Site 6 soil. To achieve closure of Site 6, the SJCA Partnering Team agreed to conduct a removal action for Site 6 to eliminate potential risk to human health and ecological receptors (CH2M HILL, 2002c).

An EE/CA was prepared in June 2002 in response to the potential risks with soil exposure. Removal actions planned for Site 6 include excavation of remnants of the caged pit, as well as surrounding material posing a potential risk to human health and the environment; and transport and non-hazardous disposal of waste and debris in a local landfill. Following complete removal of waste and contaminated media posing a potential risk, the land comprising Site 6 will have unrestricted use (CH2M HILL, 2002c).

2.2.1.7 Site 7—Old Storage Yard

Site 7 consists of a previously fenced, outdoor grassy area used to store a variety of material including anchors, chain and equipment (Figure 2-1). The initial start date for the site is unknown. The site, however, was active when the RFA was conducted in 1989. During previous site investigations, 5-gallon containers of hydraulic oil, lubricating oil, lead paint, and open drums of sandblast grit were observed. There was also evidence that oil had leaked or was drained onto the soil from some of the equipment being stored at the site (A.T. Kearney, Inc., 1989).

Two soil samples were collected and analyzed for VOCs, SVOCs, pesticides/PCBs, and inorganics during the RRR data collection study. Bis (2-ethylhexyl)phthalate and methylene chloride were organic constituents detected in the samples. The RRR results were used to conduct a HHRS and ERS as part of the SSA (CH2M HILL, 2002a). Based on the HHRS and ERS, the SJCA Partnering Team recommended NFA for the site under CERCLA. Surface debris identified at the site was removed in 4th Quarter of 2002. A document confirming the removal of the debris will be prepared in 2nd Quarter of 2003.

2.2.1.8 Site 8—Cross and Mine

Site 8 is located near the intersection of Cross Street and Mine Road, adjacent to, and north of, Building 212 and across the street from Building M-1 (Figure 2-1). From the 1950s to mid-1960s, the site was used for disposal of rinse water from mobile insecticide and herbicide spray trucks. It is estimated that 675,000 gallons of rinse water were discharged directly to the ground and allowed to infiltrate into the soil. Although the 1981 IAS report (NEESA, 1981) stated that the area is “devoid of vegetation”, the 1989 RFA noted that the area was covered with grass (A.T. Kearney, Inc., 1989).

The site was included in the 1983 PA conducted by NUS. No VOCs were detected in air, and no radiation was detected. During the RRR data collection study, four surface soil samples and one groundwater sample were collected and analyzed for pesticides and PCBs. Pesticides detected in one or more soil samples include DDT, DDD, DDE, and endrin. No pesticides or PCBs were detected in groundwater. The RRR results were used to conduct a HHRS and ERS as part of the SSA (CH2M HILL, 2002a). No risks were found to exist. However, concerns remained regarding the historical record of 675,000 gallons of pesticide rinse water discharged to the ground remained and the site is recommended for further study (CH2M HILL, 2002a). Further investigation of Site 8 is planned for FY 2003 pending availability of funds.

2.2.1.9 Site 9—Washrack Building 249

Site 9 was located at the east end of Building 249 and was a single concrete wash pad which was divided into two separate stalls (Figure 2-1) (A.T. Kearney, 1989). One stall was rebuilt in approximately 1981 and the other was constructed in 1986. Each stall measured approximately 15 feet by 40 feet and was surrounding by 6 inch to 8 inch concrete berms. One stall was used to remove grease and the other was used to rinse non-greasy items. The unit was located outdoors and was not covered (A.T. Kearney, 1989).

From the mid-1960s to 1976, the wash pad was used for cleaning pesticides and herbicides out of mobile spray tanks. Wastes managed at Site 9 also included solvent wastewater from rinsing various types of equipment. Prior to 1976, the wash pad waste discharged toward the southern end of the wash pad and into a storm drain which discharged to St. Juliens Creek. In 1976, the discharge stream was redirected to a sanitary sewer. In 1989, during the RFA, the discharge was being directed to an oil/water separator. During the VSI, oily sludge was observed on the soil beyond the secondary containment of the pad (A.T. Kearney, 1989).

Site 9 included the oil/water separator located adjacent to the wash pad. The separator was a subgrade, concrete, open-top tank with a metal grating cover. Rinsate and washdown material from the wash pad were collected in the separator. The RFA states that SJCA personnel reportedly pumped sludge on a periodic basis from the bottom of the separator into a vacuum truck. The sludge was transported offsite for final disposal. Excess water was directed to a POTW conduit via a level control outlet. It is not known when the oil/water separator was installed. During the VSI, no evidence of release from the separator was noted (A.T. Kearney, 1989).

Site 9 also encompassed pesticide storage and management operations which started in the mid-1960s in Building 249 (A.T. Kearney, 1989). During the IAS study in 1981, Building 249 was used for storing a variety of unused equipment and pesticides, but was mostly empty.

Three 55-gallon drums and one bag of pesticides were being stored in the building during the IAS. The drums and bags contained pesticides including Malathion, Exxon XD 3-30, Ortho VOKK 70, and diazinon (A.T. Kearney, 1989).

During the PA conducted in 1983, no VOCs or radiation were measured above background levels in air at the site. In 1989, at the time of the RFA, the building was used as a repair and maintenance shop for vehicles used at the facility. Building 249 contained heavy equipment, vehicles needing repair, tools, and operational areas (e.g., solvent baths) normally found in automotive garages.

Site 9 was remediated during a removal action conducted as part of the Shore Intermediate Maintenance Activity (SIMA) facility construction (Building 1556). Site 9 has been recommended for NFA under CERCLA based on the removal action.

2.2.1.10 Site 10—Waste Disposal at Railroad Tracks

Site 10 is located in the vicinity of Building 13 (Figure 2-1). According to the RFA report, the site is the reported disposal location for wastes generated during hardware cleaning operations, which occurred from pre-1940 to the mid-1970s. Wastes handled at this location included Alodine (a caustic detergent), methyl ethyl ketone, and acetone. It was also reported that liquid wastes were poured on the railroad tracks, though no evidence of a release was observed during the RFA (A.T. Kearney, 1989). The railroad track is currently inactive. Additionally, Building 13 was observed to be a well-maintained machine shop with no evidence of contamination during the RFA. As part of the RRR study (CH2M HILL, 1996), one groundwater sample and two surface soil samples were collected and analyzed for VOCs, SVOCs, and inorganics. In addition to a variety of metals, PAHs and methylene chloride were detected in the soil; however concentrations were below the quantitation limit of the analytical instruments. The groundwater contained low levels of trichloroethene.

In addition, the USEPA, VDEQ, and Navy proposed that SWMU 31 (the swale beneath Building 13) should be addressed as part of Site 10. SWMU 31 was identified in the RFA as a swale that ran under Building 13 and eventually drained into St. Juliens Creek. Rinsate generated from the washing of smokeless powder cans that were washed in Buildings 13 and 47 was emptied into the swale (NEESA, 1981). During the VSI for the RFA, neither the swale area nor any evidence of contamination such as staining or stressed vegetation were found. Facility representatives indicated that they did not know of a swale in this area.

During meetings/site visits conducted in November 1999 and February 2000, it was observed that the former swale located between Buildings 13 and 199/278 (Sites 10 and 17, respectively) was paved. The former swale would have traversed Site 17 and Site 2, currently under RI/FS investigation. Photographs show that this area has been paved since 1949.

Site 10 was included in the SSA finalized in 2002 (CH2M Hill, 2002a). Human health and ecological risk screens and background data were used to determine that groundwater and surface soil at Site 10 do not pose a concern to human health and do not warrant further evaluation. The SJCA Partnering Team came to consensus during a site visit in July 2001 that Site 10 is recommended for NFA.

2.2.1.11 Site 11—Waste Disposal at Building 53 (formerly Building 266)

Site 11 is located at Building 53 (formerly referred to as Building 266), which was the facility electrical shop located in the industrial area east of Craddock Street (Figure 2-1). In the IAS report (NEESA, 1981) it was stated that station electricians used 5 gallons of trichloroethene per month. Most of the solvent evaporated, but the remainder was disposed on the railroad track bed adjacent to Building 53.

By 1989, at the time of the RFA site visit (A.T. Kearney, 1989), the building had been converted to a recreation room. No evidence of waste disposal around the building was found. As part of the RRR study (CH2M HILL, 1996), one surface soil sample and one groundwater sample were collected and analyzed for VOCs, SVOCs, pesticides/PCBs, and inorganics. Surface soil contained DDT, DDE, dieldrin, endrin, and Aroclor-1260. Several PAHs were detected at concentrations below the instrument quantitation limit. Methylene chloride and trichloroethene were both detected (below the quantitation limit) at a concentration of approximately 6 ppb. The groundwater sample contained several metals and VOCs, including 1,2-dichloroethene (total) (100 ppb), methylene chloride (11 ppb), and trichloroethene (46 ppb) (CH2M HILL, 1996).

Site 11 was included in the SSA finalized in 2002 (CH2M HILL, 2002a). No surface soil human health risks were found for one of the two soil samples. Groundwater VOC results, however, were above the MCLs. No additional ecological evaluation was recommended in the SSA. Due to its proximity to Site 21 where trichloroethene was also detected in a site groundwater sample, VOCs in Site 11 groundwater will be addressed under further investigation of groundwater at Site 21. Consensus for a NFA recommendation was reached by the SJCA Partnering Team during the July 2001 site visit.

2.2.1.12 Site 12—Sand Blast Area Building 323

Site 12 was located at Building 323 where sand blasting operations were conducted. It is not known when sand blasting operations began at Site 12. Wastes at the site consisted of waste blast grit and particulates removed from the items being blasted (e.g., paint, metal).

The building consisted of bare floors and a metal shed which was covered, divided into two stalls, and open at two ends. No release controls were in place at the unit during the 1989 RFA, although there was a roof and several walls to help confine particulate waste as it was generated. During the RFA, it was stated that additional barriers were being planned for installation in the future to prevent particulate waste grit from escaping the building. Sand blast waste was observed in the past on the ground surrounding Building 323 (A.T. Kearney, 1989).

Site 12 was remediated during a removal action conducted as part of the SIMA facility construction. Consensus for NFA under CERCLA for Site 12 was reached by the SJCA Partnering Team based on the removal action.

2.2.1.13 Site 13—Waste Generation Area

Site 13 was a fenced concrete pad used to store waste liquids (e.g., battery acid, lacquer thinner, antifreeze, and lube oils) prior to being sent to the waste accumulation area. The pad measured approximately 20 feet by 20 feet and was surrounded by a 6-foot high chain-link fence. Entrance into the area was controlled by a locked gate. The concrete pad was

surrounded by sand bags forming a berm. It is not known when waste storage operations began at Site 13 (A.T. Kearney, 1989).

Waste liquids were contained in closed, 55-gallon barrels. After the barrels were filled, they were relocated to the facility waste accumulation area within 72 hours of filling. During the VSI, oily stains were observed on concrete pad and, to a lesser degree, on the soil in areas surrounding the pad (A.T. Kearney, 1989).

Site 13 was remediated during a removal action conducted as part of the SIMA facility construction. Consensus for NFA under CERCLA for Site 13 was reached by the SJCA Partnering Team based on the removal action.

2.2.1.14 Site 14—Washrack Building 266

Site 14 was a washrack reportedly located at Building 266. The area was remediated during a removal action conducted as part of the SIMA facility construction (Building 1556). Consensus for NFA under CERCLA for Site 14 was reached by the SJCA Partnering Team.

2.2.1.15 Site 15—Fire Training Area

Site 15 is the fire training area located at Building 271. Site 15 consists of two adjacent celled areas which are used to train personnel to fight fires. One of the celled areas consists of a burning site where wooden pallets are soaked with diesel, ignited, and extinguished with water. The other burning site is a buried stainless steel pit measuring approximately 4 feet by 4 feet by 3 feet deep. The pit is filled with diesel fuel which is ignited and extinguished using carbon dioxide. It is not known when waste storage operations began at Site 15 (A.T. Kearney, 1989).

Wastes managed at this site include wooden pallets and diesel fuel. No controls structures, other than the stainless steel pit, were in place during the 1989 RFA, to control releases to the environment. During the VSI, blackened and stained soil was observed and ashes from the burning of the pallets were piled along the fence-line behind the fire training area. The soil where the diesel fuel was stored also was found to be stained (A.T. Kearney, 1989).

Site 15 will be investigated under the Navy's Underground Storage Tank (UST) program. Consensus for NFA under CERCLA for Site 15 was reached by the SJCA Partnering Team.

2.2.1.16 Site 16—Defense Reutilization and Marketing Office (DRMO) Storage/Salvage Yard

Site 16 consists of the area surrounding Buildings 400, 168, and 173, particularly around the railroad tracks; the railroad tracks are currently inactive at the DRMO (Figure 2-1). Waste, including scrap stainless steel, was observed at the site during the RFA (A.T. Kearney, 1989). The RFA also reported that there was no evidence of hazardous materials being managed at the site.

During the RRR data collection study, soil and groundwater samples were collected and analyzed for VOCs, SVOCs, pesticides/PCBs, inorganics, and nitramines. In addition to several metals, the following organic contaminants were detected in soil: DDD, DDT, alpha chlordane, Aroclor-1254, dieldrin, endrin, endrin aldehyde, gamma chlordane, several PAHs, di-n-butylphthalate, di-n-octylphthalate, and bis(2-ethylhexyl)phthalate. Groundwater samples from the site contained acetone and methylene chloride.

Consensus for NFA under CERCLA for Site 16 was reached by the SJCA Partnering Team since the DRMO is managed under RCRA.

2.2.1.17 Site 17—Storage Pad at Building 279

Site 17 is located within the industrial area of the Base, east of Craddock Street, and consists of a concrete storage pad located just outside Building 279 (Figure 2-1). The storage pad was used to store two 55-gallon drums of PD-860, a commercial product used as a degreaser. Stains on the ground near the pad, as well as indications of poor management (e.g., overflowing catch bucket under drum spigot) were noted during the RFA site visit (A.T. Kearney, Inc., 1989).

Soil and groundwater samples were collected during the RRR data collection study and analyzed for VOCs, SVOCs, and inorganics. In addition to inorganic constituents, the following organic constituents were detected in site soils: DDD, DDE, DDT, alpha-chlordane, Aroclor-1254, dieldrin, endrin, gamma-chlordane, bis (2-ethylhexyl)phthalate, and several PAHs. No organic constituents were detected in the groundwater sample.

Four surface soil samples were collected and analyzed as part of an Expanded Site Investigation conducted in 2001 (CH2M HILL, 2001a). Several PAHs and metals were present above background concentrations and human health and ecological screening values. The site inspection concluded that Site 17 may pose a risk to human health and the environment. It was recommended that an additional investigation be conducted to define the vertical and horizontal extent of contaminants and better define any potential risk at Site 17 (CH2M HILL, 2001a). Further investigation of Site 17 is planned for FY 2003 pending availability of funds and the scheduled demolition of Building 278/279.

2.2.1.18 Site 18—Blasting Grit at Building 47

Site 18 is located adjacent to the south wall of Building 47 (Figure 2-1). This site was first identified as AOC C during the 1989 RFA. Sand blasting grit was observed during the RFA site visit. Although Building 47 housed two sand blasting booths, personnel working in that building reported that they do not use black blasting grit in their machines. Therefore, the source of the material identified as grit during the RFA site visit is unknown.

As part of the RRR study (CH2M HILL, 1996), one surface soil sample was collected at Site 18 and analyzed for VOCs, SVOCs, and inorganics. Inorganics as well as several SVOCs (mostly PAHs), and two VOCs (methylene chloride and trichloroethene, both at a concentration of approximately 4 ppb) were detected. A human health and ecological risk screening were conducted as part of the SSA (CH2M HILL, 2002a). No human health risk was identified and no further ecological evaluation was recommended. In addition, during the July 2001 SJCA Partnering Team site visit, no blast grit was observed in several hand auger borings. Consensus for NFA was reached by the SJCA Partnering Team during the July 2001 site visit.

2.2.1.19 Site 19—Wharf Area Building M-5

Site 19 is located between Building M-5 and Building 190 to the south of the mouth of Blows Creek (Figure 2-1). It was reported that various ordnance items may have been dropped in this area during past ordnance management activities (A. T. Kearney, 1989). During the RFA, the area was noted to contain a variety of construction rubble. During the VSI, facility

personnel reported no knowledge of residual contamination from ordnance management operations.

During the RRR data collection study, surface soil and groundwater samples were collected and analyzed for VOCs, SVOCs, pesticides/PCBs, inorganics, and nitramines. No explosives were detected in the surface soil samples. Organic constituents that were detected in surface soil included DDD, DDE, DDT, alpha chlordane, Aroclor-1254, dieldrin, endrin, and several PAHs. Organic constituents detected in the groundwater sample included acetone and methylene chloride.

The RRR analytical results were used to conduct a HHRS and ERS as part of the SSA (CH2M HILL, 2002a). The SSA concluded that groundwater should be further evaluated to confirm the presence of arsenic and methylene chloride at concentrations that may pose a human health risk. Surface soil may pose a concern to human health and was also recommended for further evaluation. No further evaluation of potential ecological effects was necessary based on results of the ERS (CH2M HILL, 2002a).

Additional concerns with Site 19 are related to two concrete drainage culverts and a weir which were observed during a site visit conducted in 2001. The concrete drainage culverts and the weir lead from former Buildings 190 and 240 through a fence towards the Southern Branch of the Elizabeth River (CH2M HILL, 2002a).

Further investigation of Site 19 is planned for FY 2003 pending availability of funds.

2.2.1.20 Site 20—Wharf Area Sediments

Site 20 is located adjacent to the former wharf in the Southern Branch of the Elizabeth River (Figure 2-1). The IAS (NEESA, 1981) concluded that it was likely that ordnance had been dropped into the sediments adjacent to the former wharf during loading and unloading operations. According to the IAS document, Explosive Ordnance Disposal (EOD) Team divers identified some metal and thick silt deposits in the area of the old pier.

During the RRR data collection study (CH2M HILL, 1996), an underwater reconnaissance and a magnetometer survey, in which EOD divers searched the sediments, were performed in that area. The magnetometer survey identified approximately 68 buried “contacts” surrounding the former wharf pilings. Many individual “contacts” were identified in random locations between the pilings. The most significant concentration of “contacts” was along the center west side of the pilings, between the pilings and the river bank. No visual confirmation of “contacts” was made during the RRR data collection study. It is important to note that “contacts” might indicate any type of buried metal object, and does not necessarily indicate the presence of buried ordnance. Four sediment samples were collected during the RRR study and were analyzed for VOCs, SVOCs, pesticides, PCBs, inorganics, and nitramines.

One explosive, 1,2-dinitrobenzene, was detected in one sediment sample. Metals, one pesticide, several PAHs, bis(2-ethylhexyl)phthalate, and one VOC, methylene chloride, were detected in sediment. A human health and ecological risk screening were conducted as part of the SSA. Site 20 sediment was not found to pose a potential concern to human health. The ERS concluded the potential for adverse effects to benthic organisms is likely minimal and does not warrant further evaluation. However, due to the potential for buried ordnance, under the Navy’s Range Program, signs will be posted at Site 20 to prohibit intrusive

activities. Additionally, the Navy will place a warning notice for potential UXO at Site 20 in LANTDIV Real Estate Documents. The US Army Corps of Engineers will also be notified of the potential for UXO at Site 20. During the July 2001 partnering team site visit, consensus was reached for NFA under CERCLA based on the actions taken under the Navy's Range Program.

2.2.1.21 Site 21—Soil Staining at Building 187

Building 187 was a locomotive shed, used for locomotive maintenance (Figure 2-1). The IAS reported that the area around the locomotive shed was saturated with oil (NEESA, 1981).

During the RRR data collection study surface soil and groundwater samples were collected and analyzed for VOCs, SVOCs, pesticides/PCBs, and inorganics. Pesticides (DDT, DDD, and DDE), Aroclor-1260, benzo(g,h,i)perylene, and fluoranthene were detected in surface soil samples. In addition to several inorganic constituents (including cyanide), groundwater contained one SVOC and eight VOCs (including 1,1-dichloroethane, 1,2-dichloroethene (total), 1,2-dichloropropane, acetone, carbon tetrachloride, chloroform, methylene chloride, and trichloroethene).

The RRR analytical results were used to conduct a HHRS and ERS as part of the SSA (CH2M HILL, 2002a). Based on the HHRS and exceedances of the Federal MCL, the SSA recommended that Site 21 groundwater be further evaluated. No further action was recommended for surface soil and for evaluating potential ecological effects (CH2M HILL, 2002a). Future investigations of groundwater at Site 21 will include groundwater at Site 11 due to the proximity of the two sites. Further investigation of the Sites 11 and 21 groundwater is planned for FY 2003 pending availability of funds.

2.2.2 Descriptions of EPIC Areas of Concern

The sites described in this section were identified during the EPIC Study and review conducted in 1999. A SSA was conducted in 2001 to identify if each EPIC AOC requires additional investigation, removal action, or NFA. The location of each EPIC AOC is shown in Figure 2-1. Table 2-3 provides a summary of pertinent building and related area information for several AOCs.

2.2.2.1 EPIC AOC 1—E Street and Marsh Road Ground Scarring

AOC 1 is located in the northernmost area of SJCA, near the intersection of E Street and Marsh Road (Figure 2-1). AOC 1 was identified for investigation during the joint USEPA, VDEQ, and Navy review of historical aerial photographs (EPIC Study) of the facility in June 1999. In the EPIC study interpretation of the 1937 aerial photograph, this EPIC AOC was identified as a possible waste disposal area. Ground scarring, both north and south of Marsh Road, was apparent in the photograph. The area north of Marsh Road was approximately 200 feet by 150 feet, and the area south of Marsh Road was approximately 125 feet by 80 feet. By 1949, the date of the subsequent EPIC photograph, the area had been developed and Buildings 182 and 181 were constructed north of and over part of the scarring. The observation of marine shell fragments in the soil during a site visit in November 1999 indicated that the area had possibly been filled with dredge material.

An electromagnetic (EM) geophysical survey and surface soil and subsurface soil sample collection were conducted in 2001 as part of the SSA. Seven of the eight anomalies observed

during the EM geophysical survey were attributed to utilities or other underground features. In addition to inorganics, three pesticides (DDD, DDE, and DDT), 19 SVOCs (including 17 PAHs), and one VOC (methylene chloride) were detected in surface soil samples. Five pesticides, one PCB (Aroclor-1260), 17 SVOCs (mostly PAHs), and two VOCs (acetone and methylene chloride) were measured in subsurface soil samples.

The results of the 2001 SSA investigation were used to conduct a HHRS and ERS (CH2M HILL, 2002a). Based on the HHRS, the SSA recommended further evaluation of surface soil. Additional consideration for ecological impacts to Blows Creek from PAHs was also recommended. The SJCA Partnering Team considered the site for NFA but decided that additional desktop review of the site information was necessary to assess the status of EPIC AOC 1 (CH2M HILL, 2002a). Additional evaluation, including a desktop review, of AOC 1 is planned for FY 2003 pending availability of funds.

2.2.2.2 EPIC AOC 2—Piers in Front of Building 83

EPIC AOC 2 (Figure 2-1) was identified for investigation during the joint USEPA, VDEQ, and Navy review of historical aerial photographs (EPIC Study) of the facility in June 1999. A review of a 1974 EPIC photograph showed storage of materials, possibly ordnance, in rows approximately 150 feet long in the fenced area immediately adjacent to the pier. Storage of items in this manner was not evident in photographs after 1976. In 1977, all SJCA ordnance operations/processes were moved to the Naval Weapons Station Yorktown. Additionally, releases have not been reported in this EPIC AOC. Since EPIC AOC 2 was identified in June 1999 through a review of historical aerial photographs, no historical sampling was conducted prior to that date.

The site was further evaluated in November 1999, during a work-in-progress meeting that was held and a site visit that was conducted with representatives of the Navy, CDM Federal, VDEQ, USEPA, and the BTAG. Based on a review of current and past conditions and the location of EPIC AOC 2, it was determined that sampling was not warranted.

On July 11, 2001, a partnering meeting/site visit with representatives from the Navy, USEPA, VDEQ, CDM Federal, and CH2M HILL was conducted and the site again evaluated. Based upon the information presented herein, it was the consensus of the partnering team that EPIC AOC 2 does not pose a threat to human health or the environment and requires NFA.

2.2.2.3 EPIC AOC 3—Ground Scarring at Building M-5

EPIC AOC 3 (Figure 2-1) was identified for investigation during the joint USEPA, VDEQ, and Navy review of historical aerial photographs (EPIC Study) of the facility in June 1999. USEPA identified ground scarring east of Building M-5 on the April 1949 aerial photograph. The area of scarring was roughly circular and approximately 70 feet in diameter.

The site was further evaluated in November 1999, during a work-in-progress meeting and a site visit that was conducted with representatives of the Navy, CDM Federal, VDEQ, USEPA, and the BTAG. Upon review of current and past conditions and location of this EPIC AOC through additional evaluation of aerial photographs, it was confirmed that the ground scarring was fill material. Review of subsequent aerial photographs indicated that the SJCA facility was extended into this area east of Building M-5. This was evident in the

1937 photograph, which showed an extension of the facility to the east of Building M-5. The partnering team concluded that sampling was not warranted for this site.

On July 11, 2001, a partnering meeting/site visit with representatives from the Navy, USEPA, VDEQ, CDM Federal, and CH2M HILL again evaluated the site. Based upon the information presented herein, it was the consensus of the partnering team that EPIC AOC 3 does not pose a threat to human health or the environment and NFA is recommended under CERCLA.

2.2.2.4 EPIC AOC 4—Parking Area South of Building M-1

EPIC AOC 4 (Figure 2-1) was identified for investigation during the joint USEPA, VDEQ, and Navy review of historical aerial photographs (EPIC Study) of the facility in June 1999. Soil staining and possible storage tanks were identified in a parking area located south of Building M-1 during the EPIC Study and by USEPA in a May 1958 aerial photograph.

The site was further evaluated in November 1999, during a work-in-progress meeting that was held and a site visit that was conducted with representatives of the Navy, CDM Federal, VDEQ, USEPA and the BTAG. The SJCA Partnering Team concluded that sampling was not warranted for this site.

On July 11, 2001, a partnering meeting/site visit with representatives from the Navy, USEPA, VDEQ, CDM Federal, and CH2M HILL again evaluated the site. Based upon the information presented herein, it was the consensus of the partnering team that EPIC AOC 4 does not pose a threat to human health or the environment and NFA is recommended under CERCLA.

2.2.2.5 EPIC AOC 5—Possible Soil Staining Between Buildings 87 and 88

EPIC AOC 5 (Figure 2-1) was identified for investigation during the joint USEPA, VDEQ, and Navy review of historical aerial photographs (EPIC Study) of the facility in June 1999. USEPA identified areas of possible dark staining between Buildings 87 and 88 (located in the central part of the industrial area of the Annex) in a 1964 photograph.

The site was further evaluated in November 1999, during a work-in-progress meeting and a site visit that was conducted with representatives of the Navy, CDM Federal, VDEQ, USEPA, and the BTAG. Areas of standing water were observed during the site visit. It was observed during the November 1999 site visit that grading of this area does not achieve proper drainage. Based on additional review of aerial photographs and evaluation of past and present site conditions, the areas appeared to be ponded water. Therefore, sampling is not warranted.

On July 11, 2001, a partnering meeting/site visit with representatives from the Navy, USEPA, VDEQ, CDM Federal, and CH2M HILL was held and the team evaluated the site. During the July 2001 site visit the area was mixed grass and gravel. No standing water was observed and there were no indications of current or historical contamination in the area. Based upon the information presented herein, it was the consensus of the SJCA Partnering Team that EPIC AOC 5 does not pose a risk to human health or the environments and NFA is recommended under CERCLA.

2.2.2.6 EPIC AOC 6—Ground Scarring East of Site 2

EPIC AOC 6 (Figure 2-1) was identified for investigation during the joint USEPA, VDEQ, and Navy review of historical aerial photographs (EPIC Study) of the facility in June 1999. This site, located to the west of Craddock Street across from IRP Site 2, was identified as a possible ground scarring and waste disposal area from a 1964 aerial photograph. A review of a March 1963 photograph showed no activity at this location. However, aerial photographs from May 1970 and onwards, showed the presence of a high voltage transmission tower in the disturbed area shown in the 1964 photograph.

The site was further evaluated in November 1999, during a work-in-progress meeting and a site visit that was conducted with representatives of the Navy, CDM Federal, VDEQ, USEPA, and the BTAG. Based on additional review of aerial photographs and evaluation of past and present site conditions, it was determined that sampling was not warranted for this EPIC AOC in 2001.

On July 11, 2001, a partnering meeting/site visit with representatives from the Navy, USEPA, VDEQ, CDM Federal, and CH2M HILL was held and the team evaluated the site. Based upon the information presented herein, it was the consensus of the partnering team that EPIC AOC 6 does not pose a threat to human health or the environment and NFA is recommended under CERCLA.

2.2.2.7 EPIC AOC 7—City of Portsmouth Outgrant Area

EPIC AOC 7 (Figure 2-1) was identified for investigation during the joint USEPA, VDEQ, and Navy review of historical aerial photographs (EPIC Study) of the facility in June 1999. This area is located just off of Victory Avenue and outside the main gate of the Annex in the City of Portsmouth outgrant area. It was identified during the EPIC Study from a 1974 aerial photograph as a storage area. In a 1985 photograph, rows of mounded material were observed. This material was thought to be truckloads of soil staged for filling of the area. By 1986, there was evidence of scarring and ground disturbance as well as mounded material, indicating that filling activities had begun.

The site was further evaluated in November 1999, during a work-in-progress meeting that was held and a site visit that was conducted with representatives of the Navy, CDM Federal, VDEQ, and the USEPA-BTAG. Upon further review of aerial photographs and evaluation of current and past site conditions, it was determined that sampling was not warranted for this EPIC AOC.

On July 11, 2001, a partnering meeting/site visit with representatives from the Navy, USEPA, VDEQ, CDM Federal, and CH2M HILL was held and the team evaluated the site. Based upon the information presented herein, it was the consensus of the partnering team that EPIC AOC 7 does not pose a threat to human health or the environment and NFA is recommended under CERCLA.

2.2.2.8 EPIC AOC 8—Possible Waste Disposal/Bulk Storage Area

EPIC AOC 8 (Figure 2-1) was identified for investigation during the joint USEPA, VDEQ, and Navy review of historical aerial photographs (EPIC Study) of the facility in June 1999. This site is located northeast of and adjacent to Building 176. EPIC AOC 8 was identified in the EPIC study interpretation of the 1974 aerial photograph as a possible bulk storage area or waste disposal area. The area is flat and currently is covered with grass. It is

approximately 300 feet long by 60 feet wide. No activity has been identified at this location in either earlier or later photographs.

In November 1999, a work-in-progress meeting was held and a site visit was conducted with representatives of the Navy, CDM Federal, VDEQ, USEPA and the BTAG. Through a review of current and past conditions and the location of this EPIC AOC, it was determined that sampling was warranted.

Accordingly, CDM collected surface soil (0 to 6-inch depth) and subsurface soil (1 to 3-foot depth) samples from three co-located locations and analyzed the samples for VOCs, SVOCs, pesticides/PCBs, metals, explosives, and low concentrations PAHs. An electromagnetic survey was conducted to delineate the site boundary, locate possible waste such as buried drums and metallic debris, and characterize the soil profile above the water table. Three anomalies, Anomaly A through C, were identified during the survey. Anomaly A appeared to be caused by above-ground features (existing fence and metal structures) whereas Anomalies B and C are due to small buried man-made objects.

The sampling results were used during the SSA to conduct a HHRS and ERS. No human health concerns were found for exposure to surface soil and subsurface soil and no further evaluation of ecological effects was recommended. On July 11, 2001, a partnering meeting/site visit with representatives from the Navy, USEPA, VDEQ, CDM Federal, and CH2M HILL was held and the team evaluated the site. Based upon the information presented herein, it was the consensus of the partnering team that EPIC AOC 8 does not pose a threat to human health and the environment and NFA is recommended under CERCLA.

2.2.2.9 EPIC AOC 9—Ground Scarring South of Building 75

EPIC AOC 9 (Figure 2-1) was identified for investigation during the joint USEPA, VDEQ, and Navy review of historical aerial photographs (EPIC Study) of the facility in June 1999. Aerial photography from February 1976 showed ground scarring under the steam line next to the railroad tracks. This area is relatively small, approximately 40 feet by 40 feet, and is located about 75 feet southwest of Building 75. This EPIC AOC was also identified in previous 1970s and early 1980s photographs.

The site was further evaluated in November 1999, during a work-in-progress meeting and a site visit that was conducted with representatives of the Navy, CDM Federal, VDEQ, USEPA, and the BTAG. Upon further review of aerial photographs and evaluation of current and past site conditions, the “ground scarring” appeared to be due to steam from the overhead steam lines. It was determined that sampling was not warranted for this EPIC AOC.

On July 11, 2001, a partnering meeting/site visit with representatives from the Navy, USEPA, VDEQ, CDM Federal, and CH2M HILL was held and the team evaluated the site. Based upon the information presented herein, it was the consensus of the partnering team that EPIC AOC 9 does not pose a risk to human health and the environment and NFA is recommended under CERCLA.

2.2.2.10 EPIC AOC 10—Ground Scarring in Wharf Area

EPIC AOC 10 (Figure 2-1) was identified for investigation during the joint USEPA, VDEQ, and Navy review of historical aerial photographs (EPIC Study) of the facility in June 1999. USEPA identified this area as “ground scarring” from a June 1986 aerial photograph. It is located in the area of the Wharf, south of the east corner of Building M-5. Photographs from 1974 indicated that this area was the former location of Buildings 244, 245, and 256. The scarring was probably the result of demolition of these buildings between 1974 and 1986.

The site was further evaluated in November 1999, during a work-in-progress meeting and a site visit that was conducted with representatives of the Navy, CDM Federal, VDEQ, USEPA, and the BTAG. Upon further review of aerial photographs and evaluation of current and past site conditions, it was determined that sampling was not warranted for this EPIC AOC.

On July 11, 2001, a partnering meeting/site visit with representatives from the Navy, USEPA, VDEQ, CDM Federal, and CH2M HILL was held and the team evaluated the site. Based upon the information presented herein, it was the consensus of the partnering team that EPIC AOC 10 does not pose a risk to human health and the environment and NFA is recommended under CERCLA.

2.2.2.11 EPIC AOC 11—Open Storage Area Northeast of Building 55

EPIC AOC 11 (Figure 2-1) was identified for investigation during the joint USEPA, VDEQ, and Navy review of historical aerial photographs (EPIC Study) of the facility in June 1999. From 1985 and 1986 aerial photographs, this area was identified as an area of open storage of drums and material at Building 55 between the railroad tracks and the road. There is no evidence of storage in this area in previous or subsequent photographs.

The site was further evaluated in November 1999, during a work-in-progress meeting and a site visit that was conducted with representatives of the Navy, CDM Federal, VDEQ, USEPA, and the BTAG. Upon further review of aerial photographs and evaluation of current and past site conditions, it was determined that sampling was not warranted for this EPIC AOC.

On July 11, 2001, a partnering meeting/site visit with representatives from the Navy, USEPA, VDEQ, CDM Federal, and CH2M HILL was held and the team evaluated the site. Based upon the information presented herein, it was the general consensus of the partnering team that EPIC AOC 11 does not pose a risk to human health and the environment. Review of aerial photographs from before 1985 and after 1986 showed no evidence of this area being used to store drums and other materials. Therefore, the partnering team consensus for EPIC AOC 11 was for a NFA recommendation under CERCLA.

2.2.2.12 EPIC AOC 12—Sandy Flat

EPIC AOC 12 (Figure 2-1) was identified for investigation during the joint USEPA, VDEQ, and Navy review of historical aerial photographs (EPIC Study) of the facility in June 1999. This site is located north of Buildings M-1 and M-5, directly adjacent to Blows Creek. It is a sandy, flat area next to the railroad tracks and it is approximately 240 feet long by 70 feet wide. In a 1937 aerial photograph, the area appeared as a marsh. By 1949, the area was devoid of vegetation. In the 1961 and 1964 photographs, a dark mounded material was

noted in the area. None of the photographs showed storage or waste disposal activities. The area is still non-vegetated with sandy soil at the surface.

The site was further evaluated in November 1999, during a work-in-progress meeting and a site visit that was conducted with representatives of the Navy, CDM Federal, VDEQ, USEPA, and the BTAG. During the site visit, marine shell fragments were observed in the soil, which indicates that the area had been filled during development of the area. Due to the lack of vegetation in the area for extended periods of time, this EPIC AOC was proposed for additional investigation in 2001.

In 2001, CDM collected surface soil (0 to 6-inch depth) and subsurface soil (1 to 3-foot depth) samples from the three co-located locations and analyzed the samples for VOCs, SVOCs, pesticides/PCBs, metals, explosives, and low concentrations PAHs. An electromagnetic survey was conducted to delineate the site boundary, locate possible waste such as buried drums and metallic debris, and characterize the soil profile above the water table. Four anomalies, Anomaly A through D, were identified during the survey. Anomaly A was probably due to partially buried concrete blocks. Anomalies B and D were most likely caused by buried man-made objects, and Anomaly C appeared to be due to the adjacent railroad tracks.

The sampling results were used during the SSA to conduct a HHRS and ERS. The HHRS concluded that contact with EPIC AOC 12 surface and subsurface soil was not expected to be a human health concern. In addition, no significant potential ecological effects were identified. Therefore, the SJCA Partnering Team consensus for EPIC AOC 12 was for a NFA recommendation under CERCLA.

2.2.2.13 AOC 13—PCP Dip Tank

AOC 13 is located in an open bay of Building M-3 (Figure 2-1). Two PCP dip tanks were located on the western wall of the open bay. Conveyor belts extended through the bay wall into the tanks. No known releases have occurred at this site. AOC 13 was identified during a 2001 interview with facility personnel. It was reported that the PCP dip tanks were in operation for a period less than 2 years during the Korean War 1951 to 1953.

During a site visit in December 2001 conducted by the SJCA Partnering Team, no evidence of staining on the concrete floor or other signs of releases were observed. However, no information was available on the location of drying operations.

The SJCA Partnering Team agreed that AOC 13 will require further review. A desktop review and sampling to determine the absence or presence of contamination is planned for FY 2003 pending the availability of funds.

2.2.2.14 AOC 14—Building 89

AOC 14 is located at the former Building 89 location. Building 89 was used for loading projectiles including 16" shells of explosive D compounds. The building was demolished sometime after 1999. There is no evidence that drainage lines were present within the building. No known releases have occurred at this site and no contaminant releases were identified during building demolition activities. The site is currently covered with grass.

The SJCA Partnering Team agreed that AOC 14 will require further review. A desktop review and sampling to determine the absence or presence of contamination is planned for FY 2003 pending the availability of funds.

2.2.3 Descriptions of RFA SWMUs and AOCs

The SWMUs and AOCs described in this section were identified during the RFA conducted in 1989 and have not been identified as IRP sites. Several of these SWMUs and AOCs were recommended for NFA under CERCLA but may require investigation under the RCRA program. Table 2-3 provides a summary of pertinent information for those AOCs and SWMUs buildings, and area related activities.

2.2.3.1 SWMU 10—Hazardous Waste Container Storage Building 254Y

SWMU 10 is located in Building 254Y and is a greater-than-90-day waste storage bunker. SWMU 10 consists of a concrete bunker covered with soil on all sides except the side with the entrance. According to the RFA, the floor of the bunker was treated with a waterproof epoxy coating. Air vents extend through the roof of the bunker (A.T. Kearney, 1989).

The bunker began operating as a waste storage area in August 1981. Wastes managed at SWMU 10 include both characteristic (e.g., D001, D002, and D003) and listed hazardous waste (e.g., F001, F002, F003, and F005). At the time of the RFA in 1989, the bunker was operating under an interim status and a drainage ditch extended across the front of the bunker.

During a RCRA Compliance Evaluation Inspection conducted in June 1986, the majority of drums at the SWMU were either badly corroded or bulging. The contents of some of the drums had leaked on or were spilled on the ground. In addition, inspection reports indicate the drums inside the unit were in unsatisfactory condition during April and May 1987 inspections. During the VSI in 1989, no evidence of a release of hazardous waste was observed either inside or outside the unit.

This SWMU was recommended for NFA under CERCLA; this SWMU is managed under RCRA.

2.2.3.2 SWMU 11—Hazardous Waste Container Storage Building 163Y

SWMU 11 is located in Building 163Y and is a greater than 90 day waste storage bunker. SWMU 11 consists of a concrete bunker covered with soil on all sides except the side with the entrance. According to the RFA, the floor of the bunker was treated with a waterproof epoxy coating and was sloped to drain into troughs. Air vents extend through the roof of the bunker. The front of the bunker previously had a railroad spur extending to the entrance of the unit. At the time of the RFA in 1989, a drainage ditch extended across the front of the bunker (A.T. Kearney, 1989).

Designated areas within the interior of the bunker are used for storing alkali, acid, flammable, and other regulated material waste types. Twelve drums, all located on wooden pallets, were observed inside the building during the RFA. The bunker began operating as a waste storage area in August 1981. Wastes managed at SWMU 11 include listed hazardous waste and large quantities of unknown waste. Polychlorinated biphenyls (PCBs), mercuric nitrate, and trichloroethene are known to have been stored at this unit (A.T. Kearney, 1989).

At the time of the RFA in 1989, the bunker was operating under an interim status and a drainage ditch extended across the front of the bunker. During the VSI, the drainage troughs inside Building 163Y appeared to be open to the outside of the bunker. Absorbent material emitting an organic odor was observed outside the bunker entrance at the time of the VSI in 1989; however, no staining was observed on soil surrounding the unit (A.T. Kearney, 1989).

This SWMU requires NFA under CERCLA; this SWMU is managed under RCRA.

2.2.3.3 SWMU 12—PCB Storage Building 198

SWMU 12 is a warehouse located in Building 198. Warehousing operations at Building 198 began in March 1976. The warehouse stored Kepone for the USEPA until the fall of 1978. During the RFA in 1989, the building was storing PCB transformers and PCB oil. At the time of the RFA, this fully enclosed, locked building contained four 55-gallon barrels and three transformers situated on wooden pallets. The floor of the building is concrete treated with epoxy. No environmental releases were evident during the VSI in 1989.

SWMU 12 is regulated under TSCA. This SWMU was recommended for NFA under CERCLA.

2.2.3.4 SWMU 18—Old Storage Yard # 2

SWMU 18 is located south of Building 154Y and consists of an asphalt pad measuring approximately 100 by 400 feet. The area is used to store scrap metal and various types of metal equipment. Two old metal tanks with holding capacities of more than 1,000 gallons were observed during the 1989 RFA. The source of the tanks is not known but it appeared that they could have been boilers removed from a ship. It is not known when waste storage operations began at this unit. No releases were evident during the VSI conducted in 1989 (A.T. Kearney, 1989).

This SWMU requires NFA under CERCLA because of the low potential for releases to surrounding environmental media.

2.2.3.5 SWMU 19—Old Storage Yard # 3

SWMU 19 is located adjacent to IR Site 15 located at Building 271. This SWMU consists of a fenced concrete pad which appeared to be the foundation of a building previously located at the site. This unit is located outdoors and measures approximately 40 feet by 500 feet. The pad is partially surrounded by a concrete berm less than 6 inches high. In the center of the pad is a small metal building measuring approximately 20 feet by 40 feet. The area is used to store scrap metal, obsolete equipment, and piping. It is not known when waste storage operations began at this unit. No releases were evident during the VSI conducted in 1989 (A.T. Kearney, 1989).

The RFA recommended site management practices be implemented at this SWMU. The SJCA Partnering Team site visit in November 2002 did not identify concerns with the storage yard and consensus for NFA under CERCLA was reached. The site will be closed out as NFA in the FFA.

2.2.3.6 SWMU 21—Hazardous waste accumulation area (SIMA # 2)

SWMU 21 is located east of Building 47 and consists of a concrete pad measuring approximately 20 feet by 40 feet. The pad is surrounded by a concrete berm less than 6 inches high and sand bags. The area is enclosed by a 8-foot high chain-link fence and a locking gate. It is not known when this SWMU began operating (A.T. Kearney, 1989).

SWMU 21 receives waste from Site 14. Waste stored at this SWMU include old batteries, waste lacquer thinner, lube, and oils. At the time of the RFA in 1989, there were approximately 13 batteries and two 55-gallon drums of waste lube oil located in the building. Waste material is stored at this SWMU before being transported to a RCRA interim status storage facility (A.T. Kearney, 1989).

The RFA recommended NFA for this SWMU. A Partnering Team site visit in November 2002 did not identify concerns with the SWMU and consensus for NFA under CERCLA was reached. The Navy will close the site with a closure letter to VDEQ as former less than 90-day storage area.

2.2.3.7 SWMU 22—Repair Shop satellite storage area Northeast of Building 40

SWMU 22 is a repair shop satellite area located northeast of Building 40. The SWMU is an outdoor concrete pad approximately 15 feet by 35 feet and is surrounded by sand bags on two sides and a concrete curb on the other two sides (A.T. Kearney, 1989).

The pad was used in the past for the storage of hazardous waste for a period less than 90 days. According to the facility and the RFA, this SWMU began storing waste as early as 1985 and operated for approximately two years. In 1989 during the VSI, the unit was inactive and no waste was observed. Oily stains were noted on the concrete pad, but no soil staining was evident during the VSI (A.T. Kearney, 1989).

The RFA recommended NFA for this SWMU. A Partnering Team site visit in November 2002 did not identify concerns with the SWMU and consensus for NFA under CERCLA was reached. The Navy will close the site with a closure letter to VDEQ as former less than 90-day storage area.

2.2.3.8 SWMU 26—Scrap metal storage in railroad cars near Building 176

SWMU 26 consists of four open-topped railroad storage cars containing scrap metal. The cars were located on an active railroad spur near Building 176. It is not known when waste storage in the railroad cars began (A.T. Kearney, 1989).

The VSI reported that the types of waste included stainless steel scrap metal destined for DRMO. No environmental releases from this unit were evident during the VSI (A.T. Kearney, 1989).

This SWMU requires NFA under CERCLA; this SWMU is managed under RCRA.

2.2.3.9 SWMU 29—Dumpsters (throughout the Facility)

SWMU 29 consists of dumpsters located throughout the SJCA facility. Certain dumpsters have closed tops. The RFA reported that each dumpster is emptied on a regular schedule by a contractor for offsite disposal. According to the RFA, wastes handled in these dumpsters

include burnable waste (e.g., refuse), salvageable waste (e.g., metal), non-burnable, non-salvageable waste (e.g., sand), and asbestos waste (A.T. Kearney, 1989).

No release to the environment were observed during the 1989 VSI other than the dumpster identified at IR Site 7 (formerly SWMU 17) (A.T. Kearney, 1989).

This SWMU requires NFA under CERCLA; this SWMU is managed under RCRA.

2.2.3.10 SWMU 32—Overland Drainage Ditches

SWMU 32 consists of overland drainage ditches located throughout the SJCA facility. A series of overland drainage ditches were used to transport process wastewater and runoff from process areas to receiving waters. Process waste is now collected and managed at waste generation points and is no longer transported via the ditches (A.T. Kearney, 1989).

Ditches in the vicinity of Site 4 were inspected during the 1989 VSI. There was no evidence of waste transport in these ditches and no evidence of environmental releases (A.T. Kearney, 1989).

This SWMU requires NFA. Drainage ditches associated with individual sites, AOCs, or SWMUs will be investigated under CERCLA on a site-specific basis. Site-specific investigations will identify the exact boundaries of the drainage ditch and samples will be collected at all locations where there is either visible evidence of release or suspicion that past releases may have occurred.

2.2.3.11 SWMU 33—Sewer Drainage System

SWMU 33 consists of the underground sewer drainage system used for both sanitary sewage and storm water runoff. Past waste management practices were to wash unspecified waste into floor drains. Ultimately, this waste would enter either the sanitary or storm water sewer system. Waste was generated from fuze drill-out operations, ammunition breakdown operations, steam-out operations, degreasing operations, and boiler plant operations (A.T. Kearney, 1989).

During the 1989 VSI, it was noted that the oil/water separator (Site 9), which collects rinsate from the wash pad at Building 249 (also part of Site 9), is tied to the sanitary sewer. It was also noted that unspecified spilled liquids in operational areas may enter the drain system (A.T. Kearney, 1989).

This SWMU requires NFA. The sewer drainage system associated with individual sites, AOCs, or SWMUs will be investigated under CERCLA on a site-specific basis. Site-specific investigations will include evaluating the integrity of the subsurface system and may include soil sampling to determine if hazardous constituents have been released.

2.2.3.12 SWMU 34—Operational Waste Accumulation Areas

SWMU 34 consists of various waste accumulation areas located throughout SJCA. The areas are located in enclosed buildings with concrete floors. According to the RFA, a typical operational waste accumulation area is a “two-day” storage area located within a portion of the building designated as the waste accumulation area and identified as a painted floor area. Typical waste accumulation areas contained a single, closed, 55-gallon drum and a closed, 5-gallon can (A.T. Kearney, 1989).

The waste managed at each unit is specific to the operation being conducted in each building. Wastes are expected to include various waste oils and solvents. No environmental releases were observed as part of the VSI in 1989. (A.T. Kearney, 1989).

This SWMU was recommended for NFA under CERCLA; this SWMU is managed under RCRA.

2.2.3.13 AOC D—Stormwater Outfalls

AOC D consists of 35 storm water outfalls identified at SJCA. None of the outfalls are connected to sanitary sewers. The outfalls are listed as an AOC based on past releases from waste management areas located near storm water drains, lines and outfall structures. During the VSI in 1989, no evidence of a waste release was noted (A.T. Kearney, 1989).

This SWMU requires NFA. The storm water outfalls will be investigated under CERCLA on a site-specific basis. Site-specific investigations may include sampling various outfalls to determine whether there has been a release of hazardous constituents.

2.2.3.14 AOC E—Temporary Pump Storage

AOC E is located at Building 104 and is used to temporarily store generators, pumps, and heavy equipment. The VSI conducted in 1989 noted that lubricating oil had leaked from one of the pumps onto the bare ground. The leaking pump was removed and placed on the concrete foundation of Building 104 (A.T. Kearney, 1989).

AOC E was remediated during a removal action conducted as part of the SIMA facility construction. This SWMU requires NFA under CERCLA based on the removal action.

2.2.3.15 AOC F—Underground Storage Tanks

AOC F consists of nine USTs. The tanks are constructed from steel, concrete, and fiberglass, and are located at Buildings 113, 201 (two tanks), 263, 266, 271, and 283 (three tanks). The capacity of the tanks ranges from 250 to 8,000 gallons. The tanks are approximately 25 to 45 years old (A.T. Kearney, 1989).

According to the RFA, several tanks were reportedly out of service but still in place; others are currently being used for storage of refine fuels (diesel and gasoline) (A.T. Kearney, 1989).

This SWMU requires NFA under CERCLA; AOC F is managed under the Navy's UST Program.

2.2.3.16 AOC G—Former Process Buildings

AOC G consists of former process buildings located throughout SJCA. The former process buildings include structures where various processes and operations were performed; some of which were suspected to have generated hazardous constituents. Some of the structures included under AOC G no longer exist and some structures still exist but are no longer conducting process operations. A comprehensive list of existing and non-existing former process buildings is not available. It is also not know whether buildings were cleaned or decontaminated prior to being torn down or the type of waste management practices that were implemented at the buildings (A.T. Kearney, 1989).

This SWMU requires NFA under CERCLA.; however, as new information becomes available on the locations and processes conducted at former process buildings, the SJCA Partnering Team will determine if new AOCs should be added. Any former process buildings identified for further evaluation will be evaluated on a site-specific basis.

2.2.3.17 AOC J—Former Ammunition Manufacturing Areas

AOC J consists of former areas used for manufacturing ammunition. Buildings in which ammunition is believed to have been handled include Buildings 12, 13, 14, 18, 29 (which has been torn down, and was formerly adjacent to the east end of M-2), 32, 32A, 33 (these three buildings were located between Buildings 17, 38, and 39), 39, 41, 43, 46, 47, 89, 180, 184, 185, 188, 190, 193, 222 (Victory Building located between Site 5 and Blows Creek), 240 through 246, 256, 267, M-3, M-4, M-5, and M-5 Annex (A.T. Kearney, 1989). According to the IAS, different sizes and types of ammunition were loaded with black powder, smokeless powders, Explosive D, trinitrotoluene (TNT), Composition A-3, and tetryl in these areas since 1898 (NEESA, 1989). It is not known whether these areas were cleaned or decontaminated prior to being decommissioned as ammunition manufacturing areas (A.T. Kearney, 1989).

This SWMU requires NFA under CERCLA; however, as new information becomes available on these manufacturing areas, the SJCA Partnering Team will determine if new AOCs should be added. Any former ammunition manufacturing areas identified for further evaluation will be evaluation on a site-specific basis.

2.2.3.18 AOC K—Former Sewage Treatment Plant

AOC K consists of the former sewage treatment plant. The plant has been identified as a “small sewage treatment plant located onsite in an undefined proximity to Building 318” (A.T. Kearney, 1989). No other information was available during the RFA on the description and operation of the plant. The treatment plant began operating in 1942 and discontinued operations in 1947. The waste handled at this unit reportedly included treated wastewater from the onsite barracks. Inspection of the area where this plant was thought to be located did not reveal any evidence of prior existence of the plant. U.S. Navy documentation indicates that discharge of an unspecified waste to an unnamed receptor did occur at the plant (A.T. Kearney, 1989).

The SJCA Partnering Team agreed that AOC K will require further review. A desktop is currently under way and a decision will be reach in FY 2003 whether any further investigation of the AOC is warranted.

TABLE 2-1

Summary of Environmental Studies, Investigations, and Actions Completed for IR Sites
St. Juliens Creek Annex, Chesapeake Virginia

Site Number	Site Name	IAS ¹	PA ²	RFA ³	RRR	SSA	RI/FS Work Plans	RI	EE/CA	FS	PRAP	ROD	RD	RA
1	Waste Disposal Area A	1981	1983	1989	1996	2002								
2	Waste Disposal Area B	1981	1983	1989	1996		1997							
3	Waste Disposal Area C	1981	1983	1989	1996		1997	2002	2002					
4	Landfill D	1981	1983	1989	1996		1997	2002						
5	Burning Grounds	1981		1989	1996		1997	2002						
6	Small Items Pit	1981		1989	1996		1997	2002	2002					
7	Old Storage Yard	1981		1989	1996									
8	Cross and Mine Site	1981	1983	1989	1996	2002								
9	Pesticide Control Building 249		1983	1989										
10	Haz. Waste Disposal at Rail Road	1981		1989	1996	2002								
11	Haz Waste Disposal at Bldg. 266	1981		1989	1996	2002								
12	Sand Blast Area Building 323			1989										
13	Waste Generation Area			1989										
14	Washrack Building 266			1989										
15	Fire Training Area			1989										
16	DRMO Storage/Salvage Yard	1981		1989	1996									
17	Storage Pad at Building 279	1981		1989	1996									
18	Blasting Grit at Building 47	1981		1989	1996	2002								
19	Wharf Area Bldg.M-5	1981		1989	1996	2002								
20	Wharf Area Sediments	1981		1989	1996	2002								
21	Soil Staining at Bldg. 187	1981		1989	1996	2002								

TABLE 2-1

Summary of Environmental Studies, Investigations, and Actions Completed for IR Sites

St. Juliens Creek Annex, Chesapeake Virginia

Shading indicates those Sites where No Further Action is required or where No Further Action is recommended in the Final SSA (CH2M HILL, 2001).

¹IAS conducted by the Navy in 1981.

²PA conducted by NUS in 1983.

³RFA conducted by A.T. Kearney in 1989.

1981—Year Activity Complete

EE/CA—Engineering Evaluation/Cost Analysis

FS—Feasibility Study

IAS—Initial Assessment Study

PA—Preliminary Assessment

RFA—RCRA Facility Assessment

PRAP—Proposed Remedial Action Plan

RA—Remedial Action

RD—Remedial Design

RI—Remedial Investigation

ROD—Record of Decision or Decision Document

RRR—Relative Risk Ranking

SSA—Site Screening Assessment

TABLE 2-2

Current Status of IR Sites, Areas of Concern, and SWMUs
St. Juliens Creek Annex, Chesapeake Virginia

Current Site/AOC ID	Description	Other Identifications	Current Status
Site 1	Waste Disposal Area A	Dump A, RFA—SWMU 1	Three test pits were excavated in September 2002 to determine the absence or presence of waste at Site 1. No waste was encountered. Recommended for NFA.
Site 2	Waste Disposal Area B	Dump B, RFA—SWMU 2	Preparation of Site 2 Remedial Investigation Report is in progress and the report will be submitted in FY 2003.
Site 2	Waste Disposal Area B Incinerator	Dump B Incinerator, RFA—SWMU 3	Preparation of Site 2 Remedial Investigation Report is in progress and the report will be submitted in FY 2003.
Site 2	Blast Grit at Waste Disposal Area B	Blast Grit Dump B, RFA—SWMU 4	Preparation of Site 2 Remedial Investigation Report is in progress and the report will be submitted in FY 2003.
Site 3	Waste Disposal Area C	Dump C, RFA—SWMU 5	The Final Remedial Investigation Report will be submitted in August 2002. A soil removal action began in the last quarter of FY 2002.
Site 3	Waste Disposal pits at Waste Disposal Area C	Waste Disposal Pits Dump C, RFA—SWMU 30	The Final Remedial Investigation Report will be submitted in August 2002. A soil removal action began in the last quarter of FY 2002.
Site 4	Landfill D	Dump D, RFA—SWMU 6	The Final Remedial Investigation Report will be submitted in August 2002
Site 4	Dumpster storage at landfill D	Dumpster storage at Dump D, RFA—7	Recommended for NFA under CERCLA or RCRA (see RFA)
Site 4	Old tanks at dump D	RFA—AOC L	The Final Remedial Investigation Report will be submitted in August 2002
Site 5	Burning Grounds	RFA—SWMU 8	The Final Remedial Investigation Report will be submitted in August 2002
Site 6	Small Items Pit	RFA—SWMU 24	The Final Remedial Investigation Report will be submitted in August 2002. A soil removal action took place in the last quarter of FY 2002.
Site 7*	Old Storage Yard	Old Storage Yard #1, RFA—SWMU 17	Recommended for NFA under CERCLA. Surface debris was removed in 4 th quarter of FY 2002. A document will be produced in 2 nd quarter 2003 which confirms that the debris has been removed from the site.
Site 8	Cross and Mine	RFA—SWMU 9	Further investigation is planned for FY 2003 pending availability of funds. Investigation will include surface and subsurface soil and groundwater sampling.
Site 9	Pest. Control Bldg. 249	PA—SWMU 13	Recommended for NFA under CERCLA

TABLE 2-2

Current Status of IR Sites, Areas of Concern, and SWMUs
St. Juliens Creek Annex, Chesapeake Virginia

Current Site/AOC ID	Description	Other Identifications	Current Status
Site 9	Oil Water Separator at Bldg. 249	RFA—SWMU 23	Recommended for NFA under CERCLA
Site 9	Washrack Bldg. 249	RFA—SWMU 25	Recommended for NFA under CERCLA
Site 10	Waste Disposal at Railroad Tracks	Hazardous Waste Disposal Area at Bldg. 13 (Railroad Tracks), RFA—SWMU 14	Recommended for NFA under CERCLA per SSA and agreed to by the SJCA Partnering Team during July 2001 site visit
Site 10	Swale beneath Bldg. 13	RFA—SWMU 31	Recommended for NFA under CERCLA per SSA and agreed to by the SJCA Partnering Team during July 2001 site visit
Site 11	Waste Disposal at Building 53 (formerly referenced to Bldg. 266)	RFA—SWMU 15	Recommended for NFA under CERCLA per SSA and agreed to by the SJCA Partnering Team during July 2001 site visit. (Groundwater will be addressed under Site 21 investigations)
Site 12	Sand Blast Area Bldg. 323	RFA—SWMU 16	Recommended for NFA under CERCLA
Site 13	Waste Generation Area	RFA—SWMU 20	Recommended for NFA under CERCLA
Site 14	Washrack Bldg. 266		Recommended for NFA under CERCLA
Site 15	Fire Training Area	Fire Training Area at Bldg. 271, RFA—SWMU 27	Recommended for NFA under CERCLA. Additional investigation may be conducted under the Navy's UST Program
Site 16*	DRMO Storage/Salvage Yard	RFA—SWMU 28	Recommended for NFA under CERCLA. Additional investigation may be necessary under RCRA.
Site 17	Storage Pad at Building 279	Satellite storage at Bldg. 279; RFA—AOC A	Further investigation is planned for FY 2003 pending availability of funds.
Site 18	Blasting Grit at Building 47	RFA—AOC C	Recommended for NFA under CERCLA and agreed to by the SJCA Partnering Team during July 2001 site visit
Site 18 / none*	Air compressor at Bldg. 47	RFA—AOC B	Recommended for NFA under CERCLA
Site 19	Wharf Area Building M-5	Residual Ordnance at Bldg. M-5 & 190	Further investigation is planned for FY 2003 pending availability of funds

TABLE 2-2

Current Status of IR Sites, Areas of Concern, and SWMUs
St. Juliens Creek Annex, Chesapeake Virginia

Current Site/AOC ID	Description	Other Identifications	Current Status
		RFA—AOC H	
Site 20*	Wharf Area Sediments	Residual Ordnance at wharf area RFA—AOC I	Recommended for NFA under CERCLA based on the actions to be taken under the Navy's Range Program
Site 21	Soil Staining at Building 187	None	Groundwater investigation planned for FY 2003 pending availability of funds. Groundwater investigation will include Site 11.
EPIC AOC 1	E Street and Marsh Road Ground Scarring	None	Further evaluation, including a desktop review, is planned for FY 2003 pending availability of funds
EPIC AOC 2	Piers in front of Building 83	None	Recommended for NFA under CERCLA
EPIC AOC 3	Ground Scarring at Building M-5	None	Recommended for NFA under CERCLA
EPIC AOC 4	Parking Area South of Building M-1	None	Recommended for NFA under CERCLA
EPIC AOC 5	Possible Soil Staining Between Buildings 87 and 88	None	Recommended for NFA under CERCLA
EPIC AOC 6	Ground Scarring East of Site 2	None	Recommended for NFA under CERCLA
EPIC AOC 7	City of Portsmouth Outgrant Area	None	Recommended for NFA under CERCLA
EPIC AOC 8	Possible Waste Disposal/Bulk Storage Area	None	Recommended for NFA under CERCLA
EPIC AOC 9	Ground Scarring South of Building 75	None	Recommended for NFA under CERCLA
EPIC AOC 10	Ground Scarring in Wharf Area	None	Recommended for NFA under CERCLA
EPIC AOC 11	Open Storage Area Northeast of Building 55	None	Recommended for NFA under CERCLA
EPIC AOC 12	Sandy Flat	None	Recommended for NFA under CERCLA

TABLE 2-2

Current Status of IR Sites, Areas of Concern, and SWMUs
St. Juliens Creek Annex, Chesapeake Virginia

Current Site/AOC ID	Description	Other Identifications	Current Status
SWMU 10*	Hazardous Waste Container Storage Bldg. 254Y		Recommended for NFA under CERCLA
SWMU 11*	Hazardous Waste Container Storage Bldg. 163Y		Recommended for NFA under CERCLA
SWMU 12*	PCB Storage Bldg. 198		Recommended for NFA under CERCLA
SWMU 18*	Old Storage Yard # 2		Recommended for NFA under CERCLA
SWMU 19*	Old Storage Yard # 3		Recommended for NFA under CERCLA
SWMU 21*	Hazardous waste accumulation area (SIMA # 2)		Recommended for NFA under CERCLA
SWMU 22*	Repair Shop satellite storage area NE of Bldg. 40		Recommended for NFA under CERCLA
SWMU 26	Scrap metal storage in railroad cars near Bldg. 176		Recommended for NFA under CERCLA
SWMU 29	Dumpsters (throughout the facility)		Recommended for NFA under CERCLA
SWMU 32	Overland drainage ditches		Recommended for NFA under CERCLA (Ditches will be investigated on a site-specific basis)
SWMU 33	Sewer Drainage System		Recommended for NFA under CERCLA (Drainage system will be investigated on a site-specific basis)
SWMU 34	Operational waste accumulation areas		Recommended for NFA under CERCLA
AOC D	Storm Water Outfalls		Recommended for NFA under CERCLA (Outfalls will be investigated on a site-specific basis)
AOC E	Temporary pump storage		Recommended for NFA under CERCLA
AOC F*	Underground Storage tanks		Recommended for NFA under CERCLA Additional investigation may be required under the Navy's UST Program.

TABLE 2-2

Current Status of IR Sites, Areas of Concern, and SWMUs
St. Juliens Creek Annex, Chesapeake Virginia

Current Site/AOC ID	Description	Other Identifications	Current Status
AOC G	Former process buildings		Recommended for NFA under CERCLA (Buildings will be investigated on a site-specific basis.)
AOC J	Former ammunition manufacturing areas		Recommended for NFA under CERCLA (Areas will be investigated on a site-specific basis.)
AOC K	Former sewage treatment plant		Further evaluation of AOC K will be conducted to evaluate potential mercury contamination.
AOC 13	PCP Dip Tank – Bldg. M-3		Further evaluation will include a desktop review and sampling to determine the absence or presence of contaminants
AOC 14	Building 89		Further evaluation will be required.

*Site/AOC identified in the RFA, however, further desktop review indicates that the Site/AOC is not regulated under CERCLA.

NFA—No Further Action

Shading indicates those Sites where No Further Action is required or where No Further Action is recommended in the Final SSA (CH2M HILL, 2001).

Table 2-3: AOC and SWMU Buildings and Area Related Activities Summary				
RFA No.	ADDITIONAL AOC/SWMU DESCRIPTION	CURRENT STATUS	PREVIOUS ACTION	ADDITIONAL ACTION
AOC D SWMU 32 SWMU 33	Outfalls 1,2,3,4 Water Pollution Out falls Map, July 8, 1971		Rinsate and drainage from various buildings have discharged to surface water bodies via Overland Drainage Ditches (SWMU #32), Sewer Drainage System (SWMU #33), and Storm Water Outfall(s) (AOC D). The contamination migration from these buildings will be addressed as one operable unit (OU #1)	Additional information required to determine further action. Review interview information and Navy documentation of facility permit record (NWSY & NNSY) and review facility utility drawing/maps to determine probable migration routes and additional action. While OU #1 is not proposed for the SSA field investigation, the SSA report provides additional information and recommends additional investigation requirements
AOC G	Building 6	All tenet commands are scheduled for relocation by FY-07. Structure identified for future demolition.	Decontamination of Building 6 (including surrounding area and under building) and process equipment Naval Ammunition Production Engineering Center (NAPEC) developed decontamination procedures provided implementation oversight, and conducted inspection upon completion to determine compliance and effectiveness of decontamination.	Since Building 6 was decontaminated in the 1970's, it has been used as administration space by PWC. The Navy plans no further action (NFA) for Building 6.
AOC G	Building 7	All tenet commands are scheduled for relocation by FY-07. Structure identified for future demolition.	Decontamination of Building 7 (including surrounding area and under building) and process equipment Naval Ammunition Production Engineering Center (NAPEC) developed decontamination procedures provided implementation oversight, and conducted inspection upon completion to determine compliance and effectiveness of decontamination.	Since Building 7 was decontaminated in the 1970's, it has been used as storage space by NWASP. The Navy plans no further action (NFA) for Building 7.
AOC G	Building 8	All tenet commands are scheduled for relocation by FY-07. Structure identified for future demolition.	Decontamination of Building 8 (including surrounding area and under building) and process equipment Naval Ammunition Production Engineering Center (NAPEC) developed decontamination procedures provided implementation oversight, and conducted inspection upon completion to determine compliance and effectiveness of decontamination.	Since Building 8 was decontaminated in the 1970's, it has been used as administration space by NIF. The Navy plans no further action (NFA) for Building 8.
AOC G	Building 10	All tenet commands are scheduled for relocation by FY-07. Structure identified for future demolition.	Building 10 was not identified as requiring decontamination by the Naval Ammunition Production Engineering Center (NAPEC) in the assessment of St. Juliens Creek Annex. Based on review of documents, the Navy concludes that Building 10 was decontaminated and converted to administrative use prior to the NAPEC assessment.	Since Building 10 was decontaminated in the 1970's, it has been used as administration space by FTSC/LANT. The Navy plans no further action (NFA) for Building 10.
AOC G	Buildings 11, 62, & 63 (Inert Storage Warehouse)	All tenet commands are scheduled for relocation by FY-07. If not currently demolished, structure will be identified for future demolition.	Naval Ammunition Production Engineering Center (NAPEC) developed building decontamination procedures, provided implementation oversight, and conducted inspection upon completion to determine compliance and effectiveness of decontamination.	The Navy plans no further action (NFA) for these buildings.
AOC G	Buildings 16, 17, 38, & 40 (Smokeless Powder Storage)	All tenet commands are scheduled for relocation by FY-07. If not currently demolished, structure will be identified for future demolition.	Naval Ammunition Production Engineering Center (NAPEC) developed building decontamination procedures, provided implementation oversight, and conducted inspection upon completion to determine compliance and effectiveness of decontamination.	The Navy plans no further action (NFA) for these buildings.
AOC G	Building 18 Fuse and Primer Renovation and Black Powder Filling	All tenet commands are scheduled for relocation by FY-07. Structure identified for future demolition.	Decontamination of Building 18 (including surrounding area and under building) and process equipment Naval Ammunition Production Engineering Center (NAPEC) developed decontamination procedures provided implementation oversight, and conducted inspection upon completion to determine compliance and effectiveness of decontamination.	Since Building 18 was decontaminated in the 1970's, it has been used by the Fleet Training Command (FTC) as a Cryogenics School. The Navy plans no further action (NFA) for Building 18.
AOC G	Buildings 24, 28, 141, & 251 (Bulk Black Powder Storage)	All tenet commands are scheduled for relocation by FY-07. If not currently demolished, structure will be identified for future demolition.	Naval Ammunition Production Engineering Center (NAPEC) developed building decontamination procedures, provided implementation oversight, and conducted inspection upon completion to determine compliance and effectiveness of decontamination.	The Navy plans no further action (NFA) for these buildings.
AOC G	Building 29	DEMOLISHED (after W.W.II)	Demolished after W.W.II.	The Navy plans no further action (NFA) for Building 29.
AOC G	Building 32	DEMOLISHED (after W.W.II)	Demolished after W.W.II.	The Navy plans no further action (NFA) for Building 32.
AOC G	Building 32A	DEMOLISHED (after W.W.II)	Demolished after W.W.II.	The Navy plans no further action (NFA) for Building 32A.
AOC G	Building 33	DEMOLISHED (after W.W.II)	Demolished after W.W.II.	The Navy plans no further action (NFA) for Building 33.
AOC G	Building 39 20 mm & 40 mm Breakdown Plant	Located in the Historic District	Decontamination of Building 39 (including surrounding area and under building) and process equipment Naval Ammunition Production Engineering Center (NAPEC) developed decontamination procedures provided implementation oversight, and conducted inspection upon completion to determine compliance and effectiveness of decontamination.	Since Building 7 was decontaminated in the 1970's, it has been used for storage. It is currently vacant and planned for demolition in FY-02. The Navy plans no further action (NFA) for Building 39.

Table 2-3: AOC and SWMU Buildings and Area Related Activities Summary				
RFA No.	ADDITIONAL AOC/SWMU DESCRIPTION	CURRENT STATUS	PREVIOUS ACTION	ADDITIONAL ACTION
AOC G	Building 41 20mm & 40 mm Renovation Building	DEMOLISHED (1991)	Decontamination of Building 41 (including surrounding area and under building) and process equipment Naval Ammunition Production Engineering Center (NAPEC) developed decontamination procedures provided implementation oversight, and conducted inspection upon completion to determine compliance and effectiveness of decontamination.	Since Building 41 was decontaminated in the 1970's, it was used as a shipping and receiving facility for FTSCCLANT.
AOC G	Building 44 Explosive Loading into railroad tank cars (1930s)	DEMOLISHED (1982-1985)*	Decontamination of Building 44 occurred in the mid 1970s; Naval Ammunition Production Engineering Center (NAPEC) developed decontamination procedures, provided implementation oversight, and conducted inspection upon completion to determine compliance	No reports of disposal or spills are documented at this location; however, these reports indicate that excess materials from ordnance processing were cleaned up and disposed of at the Burning Grounds (Site 5). Building 44 was demolished between 1982-1985. The Navy plans no further action (NFA) for Building 44.
AOC G	Building 46 Medium Caliber Cartridge Renovation and Assembly	Demolition Planned unknown date	Decontamination of Building 46 (including surrounding area and under building) and process equipment Naval Ammunition Production Engineering Center (NAPEC) developed decontamination procedures provided implementation oversight, and conducted inspection upon completion to determine compliance and effectiveness of decontamination.	Since Building 46 was decontaminated in the 1970's, it has been used as a machine shop with some administrative space. It is currently vacant and planned for demolition The Navy plans no further action (NFA) for Building 46.
AOC G	Buildings 55, 56, & 57 (Inert and Explosive Loaded Item Storage facilities as Category 2 for building decontamination)	All tenet commands are scheduled for relocation by FY-07. If not currently demolished, structure will be identified for future demolition.	Naval Ammunition Production Engineering Center (NAPEC) developed building decontamination procedures, provided implementation oversight, and conducted inspection upon completion to determine compliance and effectiveness of decontamination.	The Navy plans no further action (NFA) for these buildings. Buildings 55 and 56 are located in the historic district.
AOC G	Buildings 59, 60, 61, 64, 65, 66, 67, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, & 84 (Explosive Loaded Items and Smokeless Powder Storage Magazines)	All tenet commands are scheduled for relocation by FY-07. If not currently demolished, structure will be identified for future demolition.	Naval Ammunition Production Engineering Center (NAPEC) developed building decontamination procedures, provided implementation oversight, and conducted inspection upon completion to determine compliance and effectiveness of decontamination.	The Navy plans no further action (NFA) for these buildings.
AOC G	Buildings 86, 87, & 88 (Explosive Item Storage- no exposed explosives)	All tenet commands are scheduled for relocation by FY-07. If not currently demolished, structure will be identified for future demolition.	Naval Ammunition Production Engineering Center (NAPEC) developed building decontamination procedures, provided implementation oversight, and conducted inspection upon completion to determine compliance and effectiveness of decontamination.	The Navy plans no further action (NFA) for these buildings.
AOC G	Buildings 161 & 162 (Bulk Hi-Explosives Support Buildings)	All tenet commands are scheduled for relocation by FY-07. If not currently demolished, structure will be identified for future demolition.	Naval Ammunition Production Engineering Center (NAPEC) developed building decontamination procedures, provided implementation oversight, and conducted inspection upon completion to determine compliance and effectiveness of decontamination.	The Navy plans no further action (NFA) for these buildings.
AOC G	Buildings 164, 165, 166, 167, 168, 169, 170, 171, 172, 173 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, & 198 (Hi-Explosive Item Storage and Smokeless Powder Storage)	All tenet commands are scheduled for relocation by FY-07. If not currently demolished, structure will be identified for future demolition.	Naval Ammunition Production Engineering Center (NAPEC) developed building decontamination procedures, provided implementation oversight, and conducted inspection upon completion to determine compliance and effectiveness of decontamination.	The Navy plans no further action (NFA) for these buildings.
AOC G	Building 185 Bag Loading operations/Ammunition Breakdown	DEMOLISHED (1985-1990)*	Decontamination of Building 185 (including surrounding area and under building) and process equipment Naval Ammunition Production Engineering Center (NAPEC) developed decontamination procedures provided implementation oversight, and conducted inspection upon completion to determine compliance and effectiveness of decontamination.	After building 185 was decontaminated in the 1970s, it was used for OCFS administration spaces prior to demolition between 1985-1990. The Navy plans no further action (NFA) for Building 185.
AOC G	Building 193	DEMOLISHED (after 1990)*	Decontamination of Building 193 occurred in the mid 1970s; Naval Ammunition Production Engineering Center (NAPEC) developed decontamination procedures, provided implementation oversight, and conducted inspection upon completion to determine compliance	Building 193 was demolished after 1990. The Navy plans no further action (NFA) for Building 193.
AOC G	Building 218, 219, &220 (Black Powder Quilting Support Buildings)	All tenet commands are scheduled for relocation by FY-07. If not currently demolished, structure will be identified for future demolition.	Naval Ammunition Production Engineering Center (NAPEC) developed building decontamination procedures, provided implementation oversight, and conducted inspection upon completion to determine compliance and effectiveness of decontamination.	The Navy plans no further action (NFA) for these buildings.
AOC G	Building 227 Ordnance (hardware) degreasing	DEMOLISHED (1982-1985)*	Spent solvents from this operation, ordnance (cartridge) degreasing at Buildings 227 & 190 were reportedly disposed of at the Burning Grounds (Site 5)	Site 5 is under investigation (RI); contamination from this source will be identified and addressed in future actions taken at Site 5. Building 227 was demolished between 1982- 1985; The Navy plans no further action (NFA) for Building 227.
AOC G	Building 240	DEMOLISHED (1998)	Decontamination of Building 240 (including surrounding area and under building) and process equipment Naval Ammunition Production Engineering Center (NAPEC) developed decontamination procedures provided implementation oversight, and conducted inspection upon completion to determine compliance and effectiveness of decontamination.	Building 240 was demolished in 1998. The Navy plans no further action (NFA) for Building 240.
AOC G	Building 241	DEMOLISHED (after 1990)*	Decontamination of Building 241 (including surrounding area and under building) and process equipment Naval Ammunition Production Engineering Center (NAPEC) developed decontamination procedures provided implementation oversight, and conducted inspection upon completion to determine compliance and effectiveness of decontamination.	Building 241 was demolished after 1990. The Navy plans no further action (NFA) for Building 241.

Table 2-3: AOC and SWMU Buildings and Area Related Activities Summary				
RFA No.	ADDITIONAL AOC/SWMU DESCRIPTION	CURRENT STATUS	PREVIOUS ACTION	ADDITIONAL ACTION
AOC G	Building 242	DEMOLISHED (after 1990)*	Decontamination of Building 242 (including surrounding area and under building) and process equipment Naval Ammunition Production Engineering Center (NAPEC) developed decontamination procedures provided implementation oversight, and conducted inspection upon completion to determine compliance and effectiveness of decontamination.	Building 242 was demolished since 1990. The Navy plans no further action (NFA) for Building 242.
AOC G	Building 243	DEMOLISHED (after 1990)*	Decontamination of Building 243 (including surrounding area and under building) and process equipment Naval Ammunition Production Engineering Center (NAPEC) developed decontamination procedures provided implementation oversight, and conducted inspection upon completion to determine compliance and effectiveness of decontamination.	Building 243 was demolished since 1990. The Navy plans no further action (NFA) for Building 243.
AOC G	Building 244	DEMOLISHED (1982-1985)*	Decontamination of Building 244 (including surrounding area and under building) and process equipment Naval Ammunition Production Engineering Center (NAPEC) developed decontamination procedures provided implementation oversight, and conducted inspection upon completion to determine compliance and effectiveness of decontamination.	Building 244 was demolished between 1982-1985. The Navy plans no further action (NFA) for Building 244.
AOC G	Building 245	DEMOLISHED (1982-1985)*	Decontamination of Building 245 (including surrounding area and under building) and process equipment Naval Ammunition Production Engineering Center (NAPEC) developed decontamination procedures provided implementation oversight, and conducted inspection upon completion to determine compliance and effectiveness of decontamination.	Building 245 was demolished between 1982-1985. The Navy plans no further action (NFA) for Building 245.
AOC G	Building 246	DEMOLISHED (1982-1985)*	Decontamination of Building 246 (including surrounding area and under building) and process equipment Naval Ammunition Production Engineering Center (NAPEC) developed decontamination procedures provided implementation oversight, and conducted inspection upon completion to determine compliance and effectiveness of decontamination.	Building 246 was demolished between 1982-1985. The Navy plans no further action (NFA) for Building 246.
AOC G	Building 256	DEMOLISHED (1986-1990)*	Decontamination of Building 256 (including surrounding area and under building) and process equipment Naval Ammunition Production Engineering Center (NAPEC) developed decontamination procedures provided implementation oversight, and conducted inspection upon completion to determine compliance and effectiveness of decontamination.	Building 256 was demolished between 1986-1990. The Navy plans no further action (NFA) for Building 256.
AOC G	Building 267	DEMOLISHED (1982-1985)*	Decontamination of Building 267 (including surrounding area and under building) and process equipment; Naval Ammunition Production Engineering Center (NAPEC) developed decontamination procedures provided implementation oversight, and conducted inspection upon completion to determine compliance and effectiveness of decontamination.	Building 267 was demolished between 1982-1985. The Navy plans no further action (NFA) for Building 267.
AOC G	Building 272 Pyrotechnics Renovation Plant	DEMOLISHED (1991)	Building 272 was not identified as requiring decontamination by the Naval Ammunition Production Engineering Center (NAPEC) in the assessment of St. Juliens Creek Annex.	Building 272 is within the area being investigated as part of the Burning Grounds (Site 5) which is under investigation (RI); contamination from this source will be identified and addressed in the future actions taken at Site 5. The Navy plans no further action (NFA) for Building 272.
AOC G	Building 277 Q.E. Lab	no data	Decontamination of X-ray test cells in Building 277 and support magazine, Building 358; Nava Ammunition Production Engineering Center (NAPEC) developed decontamination procedures, providec implementation oversight, and conducted inspection upon completion to determine compliance anc effectiveness of decontamination.	Since Building 277 was decontaminated in the 1970s, it has been used as a communication center. The Navy plans no further action (NFA) for Building 277.
AOC G	Building 358	no data	Decontamination of X-ray test cells in Building 277 and support magazine, Building 358; Nava Ammunition Production Engineering Center (NAPEC) developed decontamination procedures, providec implementation oversight, and conducted inspection upon completion to determine compliance anc effectiveness of decontamination.	Since Building 358 was decontaminated in the 1970s, it has been used as a transmitter building. The Navy plans no further action (NFA) for Building 358.
AOC I	Wharf Area Ordnance Dumping	Planned SSA Investigation	Area examined/searched by EOD divers in the 1970s. Pier area is certified as decontaminated at the single "X" level. Additional action is required if area transferred to non-DOD entities.	AOC I is under investigation as IRP Site 21.
AOC J	Building 12	All tenet commands are scheduled for relocation by FY-07. Structure identified for future demolition.	Naval Ammunition Production Engineering Center (NAPEC) assessment of Building 12 determined tha decontamination of this building was not required.	The Navy plans no further action (NFA) for Building 12
AOC J	Building 14	All tenet commands are scheduled for relocation by FY-07. Structure identified for future demolition.	Naval Ammunition Production Engineering Center (NAPEC) assessment of Building 14 determined tha decontamination of this building was not required.	The Navy plans no further action (NFA) for Building 14.
AOC J	Building 43	DEMOLISHED (after 1990)*	Decontamination of Building 43 (including surrounding area and under building) and process equipment Naval Ammunition Production Engineering Center (NAPEC) developed decontamination procedures provided implementation oversight, and conducted inspection upon completion to determine compliance and effectiveness of decontamination.	Building 43 was demolished since 1990. The Navy plans no further action (NFA) for Building 43.

Table 2-3: AOC and SWMU Buildings and Area Related Activities Summary				
RFA No.	ADDITIONAL AOC/SWMU DESCRIPTION	CURRENT STATUS	PREVIOUS ACTION	ADDITIONAL ACTION
AOC J	Building 89 (1908-1970s)	DEMOLISHED (1991)	Decontamination of Building 89 (including surrounding area and under building) and process equipment Naval Ammunition Production Engineering Center (NAPEC) developed decontamination procedures provided implementation oversight, and conducted inspection upon completion to determine compliance and effectiveness of decontamination.	Since Building 89 was decontaminated in the 1970s, it has been used for storage. It is currently vacant and planned for demolition in FY-00. The Navy plans no further action (NFA) for Building 89.
AOC J	Building 184 Primer Renovation Facility	DEMOLISHED (1985-1986)*	Decontamination of Building 184 (including surrounding area and under building) and process equipment Naval Ammunition Production Engineering Center (NAPEC) developed decontamination procedures provided implementation oversight, and conducted inspection upon completion to determine compliance and effectiveness of decontamination.	Building 184 was demolished between 1985-1986.The Navy plans no further action (NFA) for Building 184.
AOC J	Building 188 (1940s-1970) Pyrotechnic loading	All tenet commands are scheduled for relocation by FY-07. Structure identified for future demolition.	Decontamination of Building 188 (including surrounding area and under building) and process equipment Naval Ammunition Production Engineering Center (NAPEC) developed decontamination procedures provided implementation oversight, and conducted inspection upon completion to determine compliance and effectiveness of decontamination.	Since Building 188 was decontaminated in the 1970s, it has been used for storage. It is currently vacant and planned for demolition in FY-00. The Navy plans no further action (NFA) for Building 188.
AOC J	Building 190 (1940s-1970s) Medium Caliber Loading/Renovation Plant/Degreasing	DEMOLISHED (1991)	Decontamination of Building 190 (including surrounding area and under building) and process equipment Naval Ammunition Production Engineering Center (NAPEC) developed decontamination procedures provided implementation oversight, and conducted inspection upon completion to determine compliance and effectiveness of decontamination. Spent solvents from this operation, ordnance (cartridge) degreasing, at Building 190 (and 227 were reportedly disposed of at the Burning Grounds (Site 5).	Since Building 190 was decontaminated in the 1970s, it has been used for storage. It was demolished in 2001. The Navy plans no further action (NFA) for Building 190. Site 5 is under investigation (RI); contamination from this source will be identified and addressed in future actions taken at site 5.
AOC J	Building 222 Ammunition Steam Out	DEMOLISHED (after W.W.II)	Building 222 (Victory Building) demolished after W.W.II. The former location is directly adjacent to Site 5 and the berm running along the mid-section of Blows Creek.	Residual contamination from Building 222 will be investigated as part of the RI underway for Site 5. Contamination from this source will be identified and addressed in future actions. The Navy plans no further action (NFA) for Building 222.
AOC J	Building M-3 Mark VI mine loading facility/ Steam out	All tenet commands are scheduled for relocation by FY-07. Structure identified for future demolition.	Decontamination of Building M-3 occurred in the mid 1970s; Naval Ammunition Production Engineering Center (NAPEC) developed decontamination procedures, provided implementation oversight, and conducted inspection upon completion to determine compliance and effectiveness of decontamination	Since Building M-3 was decontaminated in the 1970s, it has been used for storage. It is currently vacant and planned for demolition, although the demolition has not been programmed for a specific FY. The Navy plans no further action (NFA) for Building M-3.
AOC J	Building M-4 Mark VI mine loading facility/ Steam out	All tenet commands are scheduled for relocation by FY-07. Structure identified for future demolition.	Decontamination of Building M-4 occurred in the mid 1970s; Naval Ammunition Production Engineering Center (NAPEC) developed decontamination procedures, provided implementation oversight, and conducted inspection upon completion to determine compliance and effectiveness of decontamination	Since Building M-4 was decontaminated in the 1970s, it has been used for storage. It is currently vacant and planned for demolition, although the demolition has not been programmed for a specific FY. The Navy plans no further action (NFA) for Building M-3.
AOC J	Building M-5 Mark VI mine loading facility/ Steam out	All tenet commands are scheduled for relocation by FY-07. Structure identified for future demolition.	Decontamination of Building M-5 occurred in the mid 1970s; Naval Ammunition Production Engineering Center (NAPEC) developed decontamination procedures, provided implementation oversight, and conducted inspection upon completion to determine compliance and effectiveness of decontamination	Since Building M-5 was decontaminated in the 1970s, it has been used for storage. It is currently vacant and planned for demolition, although the demolition has not been programmed for a specific FY. The Navy plans no further action (NFA) for Building M-3.
AOC J	Building M-5 Annex Medium Caliber Projectile Washout Plant	DEMOLISHED (1982-1985)*	Decontamination of Building M-5 Annex (including surrounding area and under building) and process equipment; Naval Ammunition Production Engineering Center (NAPEC) developed decontamination procedures, provided implementation oversight, and conducted inspection upon completion to determine compliance and effectiveness of decontamination.	Building M-5 Annex was demolished between 1982 and 1985. The Navy plans no further action (NFA) for Building M-5 Annex.
AOC K	Former Waste Water Treatment Plant	no data	Small sewage treatment plant (Building 318) treated wastewater from the barracks from 1942 to 1947. The barracks were demolished in 1947, and use of the plant was discontinued.	Available information pertaining to this location and recommendations for additional action for AOC K are included in the Site Screening Assessment report.
SWMU 11	Building 163 NBC Agents Storage area	Under RCRA Closure	Building 163 is a magazine bunker and has been used for storage of non-ordnance materials. Currently Building 163 is under RCRA Closure for hazardous waste storage >90 days. This DEQ enforcement is with the Norfolk Naval Shipyard.	The Navy plans no further action (NFA) for Building 163.
SWMU 31	Drainage Swales (along Building 13) Ammunition Degreasing Building 47	Demolition Planned date unknown	The drainage swale identified as SWMU # 31 has been filled and paved since the 1940s; the recipient water body (tidal marsh) is the low lying area of Landfill B.	Landfill B (Site 2) is under investigation (RI); contamination from this source will be identified and addressed in future actions taken at Site 2. The Navy plans no further action (NFA) for SWMU #13.
N/A	Septic Drainage Field-Southeast of Building 269	DEMOLISHED (after 1990)*	Septic tank and tile field associated with Building 269 (constructed as a latrine). Per a Sanitary Facilities Survey of SJCA in 1963, this was the only active septic tank and tile field at SJCA. No reported or known releases of hazardous materials have occurred at this location.	The Navy plans no further action (NFA) for this location.
N/A	Septic Drainage Field-Southeast of Building 305	no data	Septic tank and tile field associated with Building 305 (constructed as a gatehouse with latrine facilities). Per a Sanitary Facilities Survey of SJCA in 1963, Building 305 latrine facilities discharge to the sanitary sewer. No reported or known releases of hazardous materials have occurred at this location.	The Navy plans no further action (NFA) for this location.

* Based on Review of EPIC Study of Photography

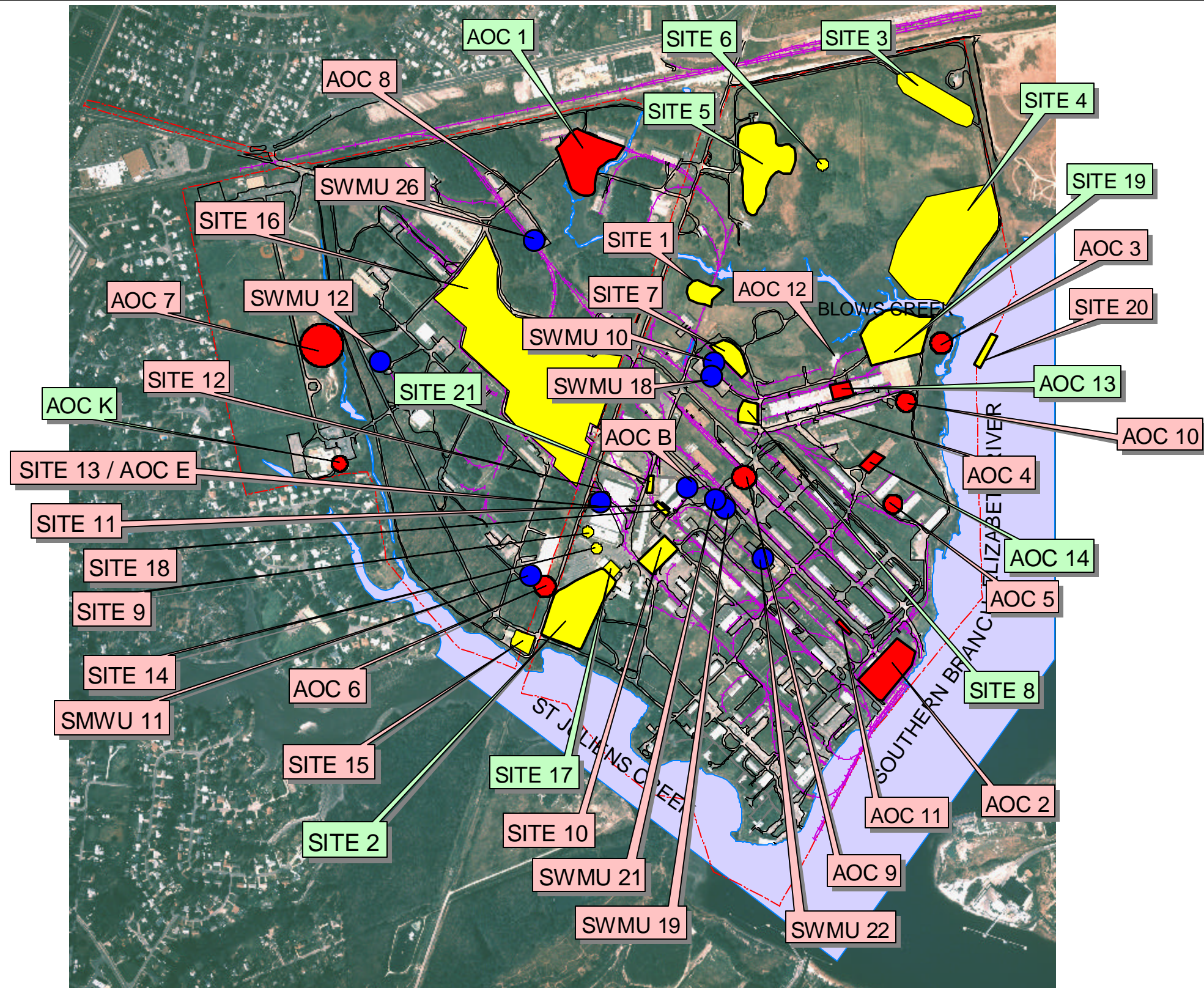


Figure 2-1
Sites, SWMUs and Areas of Concern Location Map
St. Juliens Creek Annex
Chesapeake, Virginia

3 Proposed Activities for FY 2003

This section summarizes ongoing and planned IR/CERCLA activities at each site. The discussion focuses on activities that are proposed for FY 2003 but also includes currently funded activities that may expand beyond September 2003.

Additional activities may be identified during, or as a result of, the execution of ongoing and proposed IRP efforts. The scope of proposed activities is presented on a site-by-site basis. Section 3.1 discusses base-wide activities and Section 3.2 describes site-specific characterization, remediation and long-term monitoring and maintenance activities.

The schedule for all activities discussed below depends on the availability of funding.

3.1 Multisite and Basewide Activities for FY2003

3.1.1 Preparation of the Federal Facilities Agreement

The listing of SJCA on the NPL requires that the Navy and USEPA enter into a written agreement, a FFA, that will lay out how and when CERCLA-related activities will be conducted at the base. As part of this process, the FFA identifies each specific area (site, SWMU, and/or AOC) on the base that will be addressed under the FFA, and categorizes them as to how they will initially fit into the CERCLA process. The FFA also addresses sites under Findings of Fact that require NFA under CERCLA. The Draft FFA will be submitted in FY 2003. Legal reviews by the Navy, USEPA, and VDEQ and finalization of the FFA are scheduled to be completed during FY 2003.

3.1.2 Blows Creek Watershed Baseline Ecological Risk Assessment

This proposed activity involves preparation of a Baseline Ecological Risk Assessment (BERA) for the Blows Creek Watershed. In addition to the calculation of risks, the BERA will include analysis and interpretation of the bioassay outcomes, comparison of chemical concentrations detected in Blows Creek to those present in potential offsite source areas (Southern Branch of the Elizabeth River), and an analysis of chemical fate and transport. The BERA will also provide characterization of potential risks and a consideration of management options.

The proposed activity for FY 2003 consists of finalizing the Blows Creek BERA Work Plan, conducting any additional field investigations, evaluating data, and finalizing the BERA report.

3.2 Site Characterization and Remediation Activities for 2003

3.2.1 Site 1—Waste Disposal Area A

In the last quarter of FY 2002, Site 1 characterization activities included excavating three test pits to identify the presence/absence of waste, and if present, identify the character of the waste. Surface water will also be further evaluated to determine if concentrations of

inorganics detected in Site 1 surface water are site-related or are related to background or reference conditions in Blow Creek.

3.2.2 Site 2—Waste Disposal Area B

A RI/ERA/HHRA report for Site 2 will be submitted for regulatory review during FY 2003 and a FS will be initiated to address any potential risks identified in the RI/ERA/HHRA.

3.2.3 Site 3—Waste Disposal Area C

The RI/ERA/HHRA report for Site 3 will be finalized in FY 2003. In addition, a NTCRA was conducted in the last quarter of FY 2002 to remove potential risks identified in the RI for Site 3. An EE/CA has been finalized in preparation for the removal action. The removal action included excavation, characterization (including UXO screening and removal), and disposal of excavated waste/debris as well as soil and drainage sediment. Following complete removal of waste and media posing a potential risk, the land comprising Site 3 will have unrestricted use.

3.2.4 Site 4—Landfill D

The RI/ERA/HHRA report for Site 4 will be finalized in FY 2003. Preparation of a FS will commence in FY 2003 to address potential exposures to risks identified in the RI. Potential human health risks were associated with metal concentrations in soil and sediment at localized areas within Site 4. During the FS, remedial alternatives such as soil removal or soil cover will be considered for management of these risks.

3.2.5 Site 5—Burning Grounds

The RI/ERA/HHRA report for Site 5 will be finalized in FY 2003. Preparation of a FS will address potential exposures to risks identified in the RI. Analytical results from Site 5 identified potential human health risks associated with metals in soil and drainage sediment. A FS will be initiated in FY 2004 to evaluate remedial alternatives such as soil removal or soil cover for managing these risks.

3.2.6 Site 6—Small Items Pit

The RI/ERA/HHRA report for Site 6 will be finalized in FY 2003. In addition, a NTCRA was conducted in the last quarter of FY 2002 to remove potential risks identified during evaluation of Sites 5 and 6 RI data. The removal action will include excavation, characterization (including UXO screening and removal), and disposal of remnants of the caged pit as well as soil. Following complete removal of waste and media posing a potential risk, the land comprising Site 6 will have unrestricted use.

The preparation of a PRAP and ROD are planned for FY 2003.

3.2.7 Site 7—Old Storage Yard

Surface debris at Site 7 was removed in the last quarter of FY 2002. The SJCA Partnering Team recommended NFA for the Site following removal of the equipment/material stored at the site.

3.2.8 Site 8—Cross and Mine

Further investigation of Site 8 is planned for FY 2003. FY 2003 investigation activities are expected to include surface and subsurface soil and groundwater sampling. A draft investigation report will be submitted for regulatory review in FY 2004.

3.2.9 Site 17—Storage Pad at Building 279

Additional investigation will be conducted to define the vertical and horizontal extent of contaminants and better define any potential risk at Site 17. The preparation of work plans and the completion of field investigations will occur in FY 2003 in conjunction with the scheduled demolition of the building. A Site 17 investigation report will be submitted in FY 2004 for regulatory review.

3.2.10 Site 19—Wharf Area Building M-5

Further evaluation of Site 19 surface soil and the concrete drainage culverts leading from this area of the facility will be initiated. In FY 2004, a Site 19 work plan will be finalized and field sampling will be executed. FY 2005 activities include preparation of an investigation report and submittal of the report for regulatory review.

3.2.11 Site 21—Soil Staining at Building 187

An investigation of Site 21 groundwater will commence in FY 2003. Future investigations of groundwater at Site 21 will include groundwater at Site 11 due to the proximity of the two sites. The work plan will be finalized and the groundwater samples will be collected in FY 2003. The results of the investigation will be reported in FY 2004.

3.2.12 EPIC AOC 1—E Street and Marsh Road Ground Scarring

The SJCA Partnering Team previously considered the site for NFA but decided that additional desktop review of the site information was necessary to assess the status of EPIC AOC 1 (CH2M HILL, 2002a). A desktop evaluation of EPIC AOC 1 will be conducted and finalized in FY 2003.

3.2.13 AOC 13—PCP Dip Tank

The SJCA Partnering Team agreed that AOC 13 will require further review. A desktop review, work plan preparation, and sampling to determine the absence or presence of contamination is planned for FY 2003. An investigation report summarizing the sampling results will be prepared in FY 2004.

3.2.14 AOC 14—Building 89

The SJCA Partnering Team agreed that AOC 14 will require further review. A desktop review, work plan preparation, and sampling to determine the absence or presence of contamination is planned for FY 2003. An investigation report summarizing the sampling results will be prepared in FY 2004.

3.2.15 AOC K—Former Sewage Treatment Plant

Further evaluation of AOC K will be conducted by preparing a desktop evaluation in FY 2003. The desktop evaluation will summarize the nature of activities at AOC K and the potential for releases from AOC K and will make recommendations for either further investigation of AOC K or NFA at AOC K.

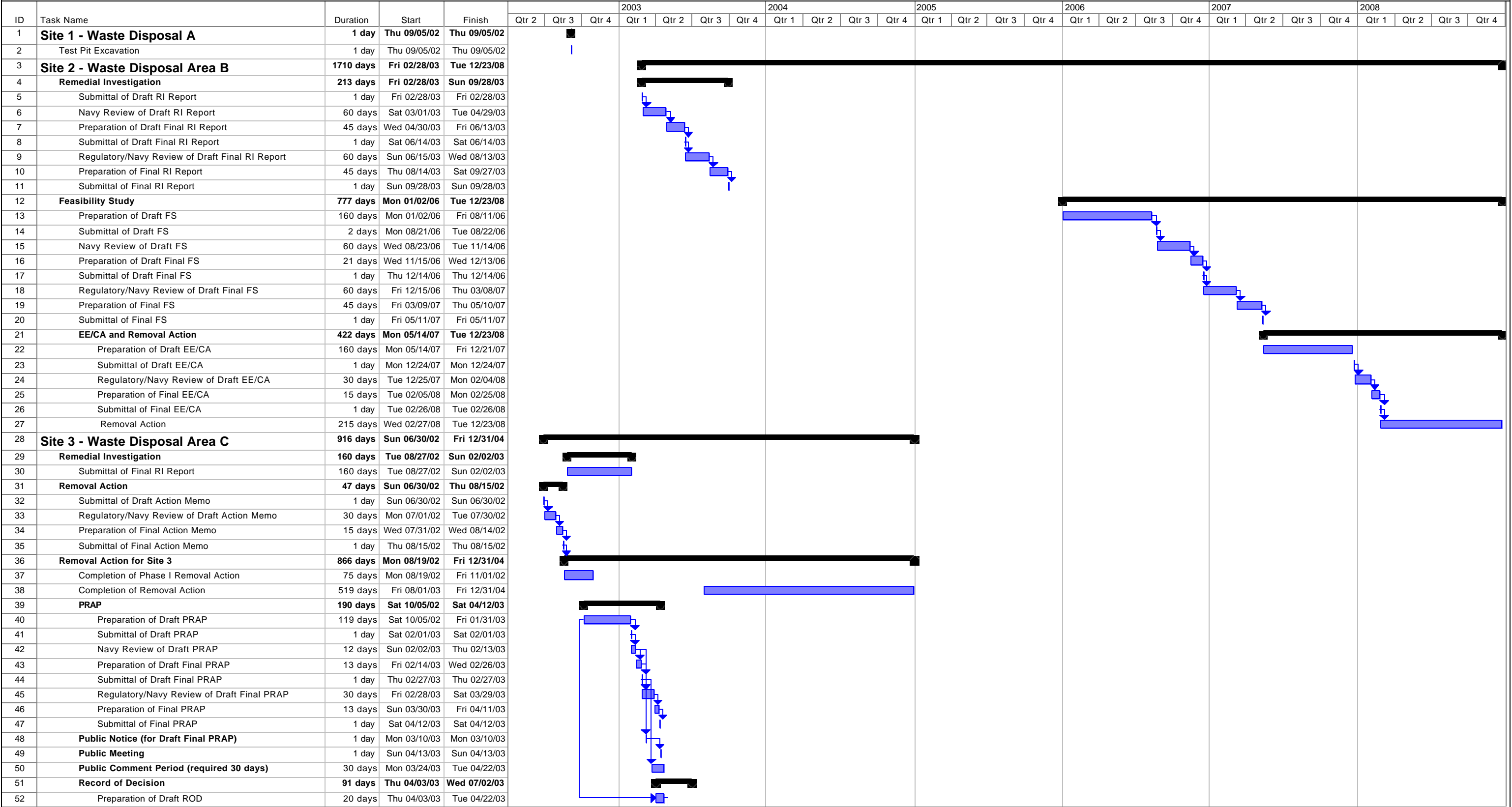
4 Site Management Schedules

This section presents the project schedules for each site discussed in Section 3 and for sites which will begin study, investigation, or remedial activities in FY 2003 through 2008. Schedules for base-wide activities are also provided in this section.

The 5-year period extends from FY 2003 through FY 2008 (October 2002 through September 2008). These schedules are adjusted annually in the SMP, as future site activities are further defined and various administrative issues, including funding, are incorporated.

The project schedule for base-wide and site-specific activities is presented in Figure 4-1. The project schedules may change depending on funding availability.

Figure 4-1
St Juliens Creek Annex Schedule of IR Activities for Fiscal Years 2003 through 2008
Site Management Plan
St. Juliens Creek Annex



Project: Figure 4-1
Date: Tue 01/28/03

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Summary

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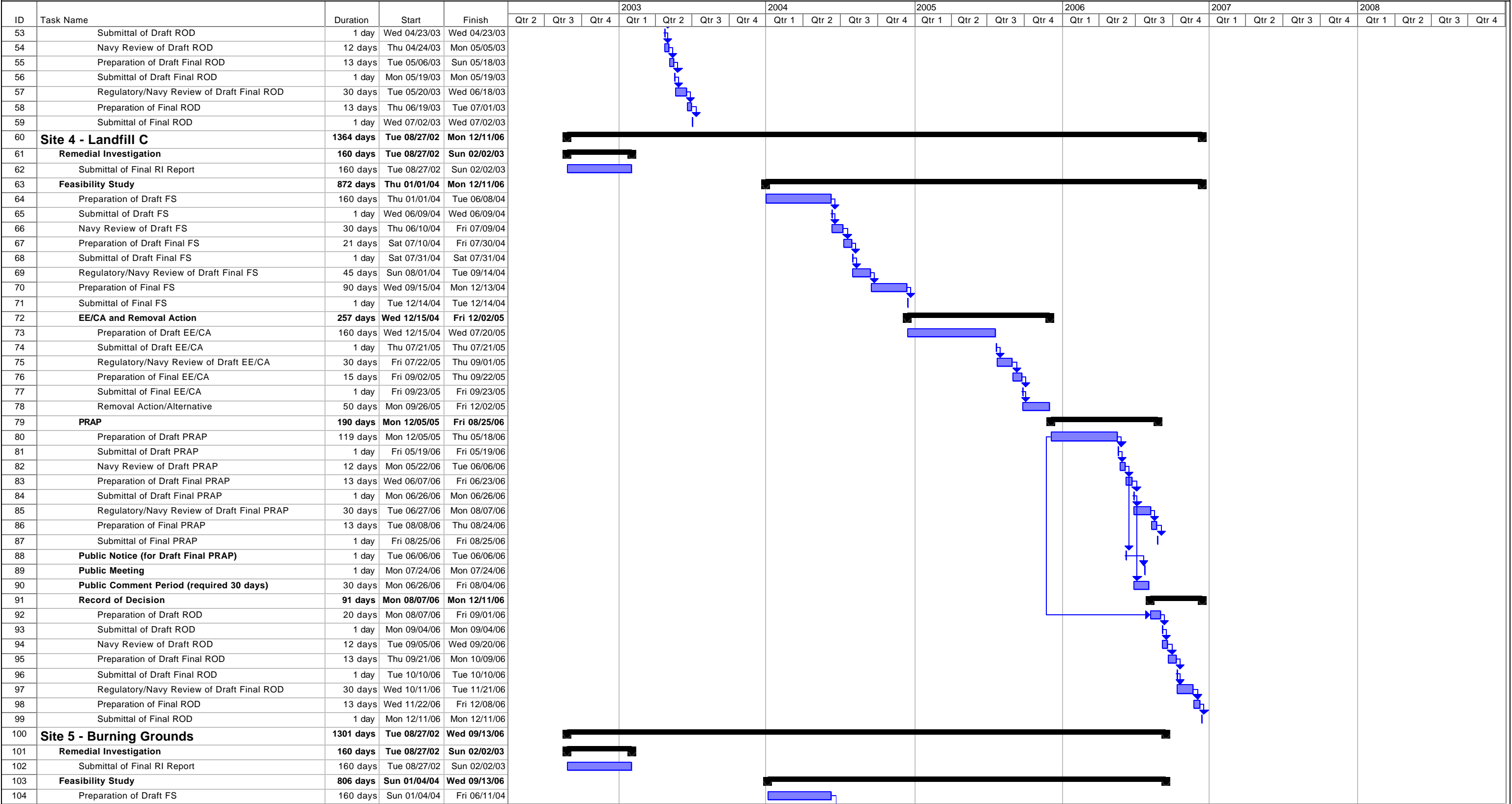
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Figure 4-1
St Juliens Creek Annex Schedule of IR Activities for Fiscal Years 2003 through 2008
Site Management Plan
St. Juliens Creek Annex



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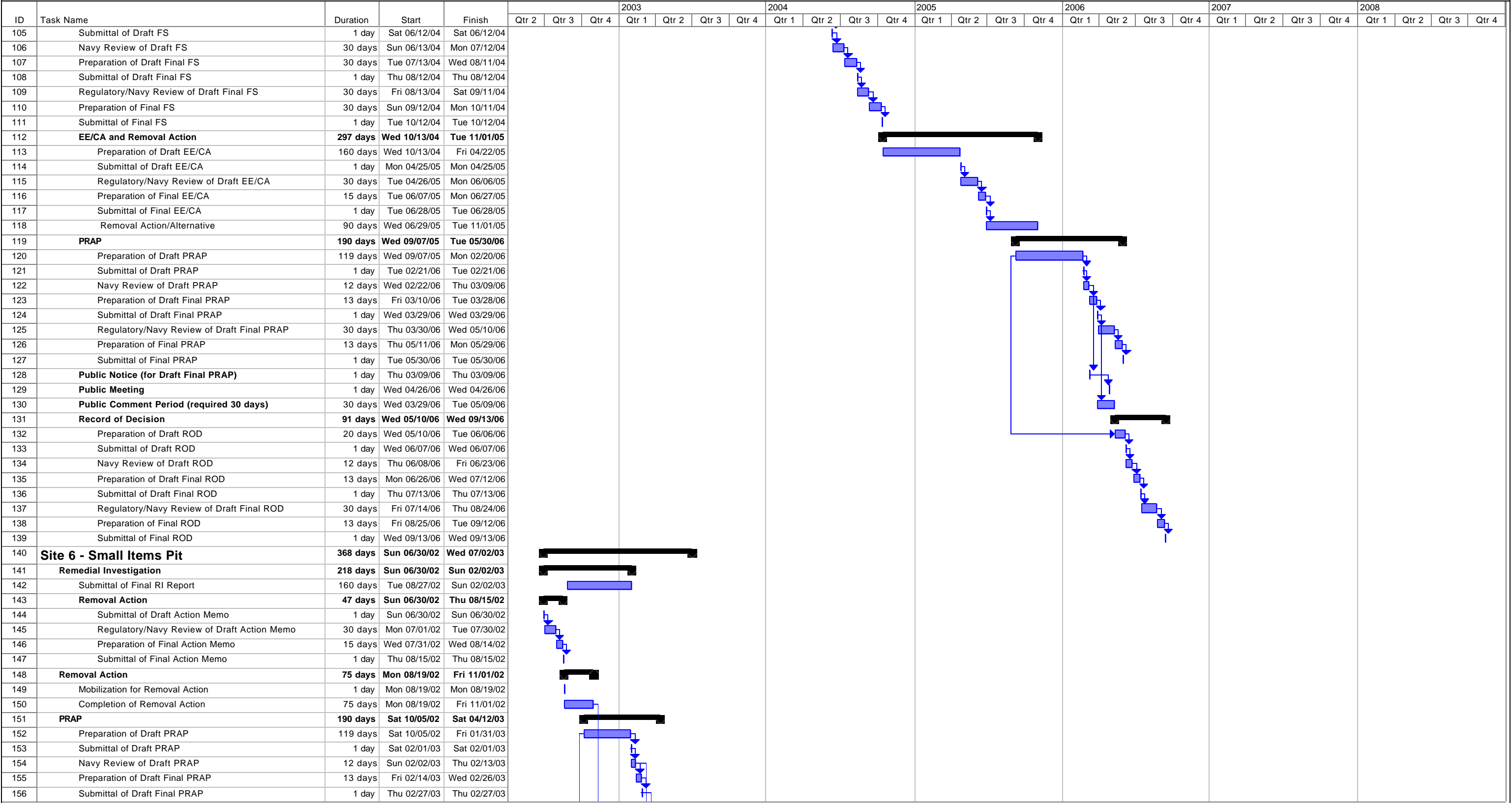
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Figure 4-1
St Juliens Creek Annex Schedule of IR Activities for Fiscal Years 2003 through 2008
Site Management Plan
St. Juliens Creek Annex



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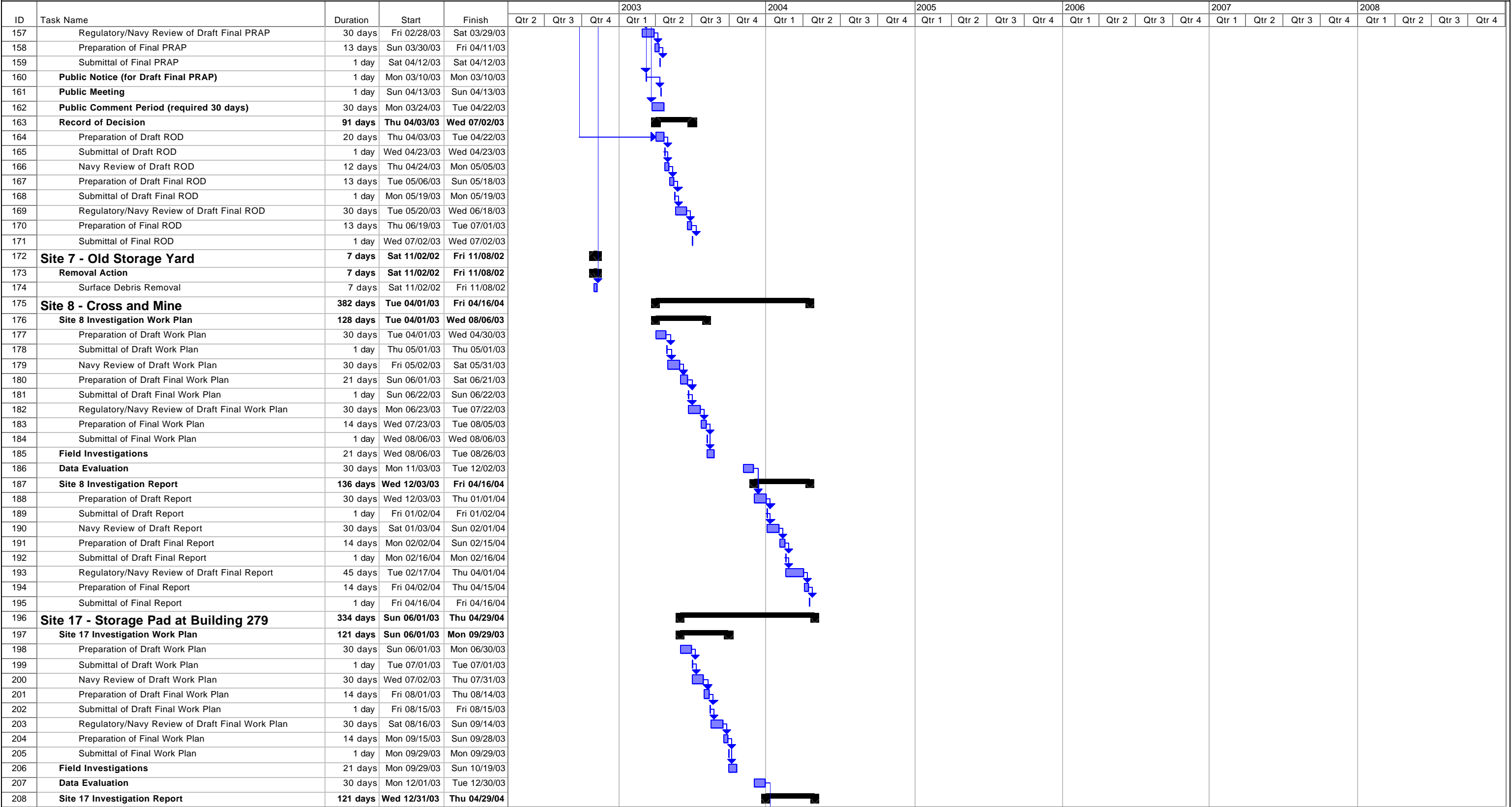
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Figure 4-1
St Juliens Creek Annex Schedule of IR Activities for Fiscal Years 2003 through 2008
Site Management Plan
St. Juliens Creek Annex



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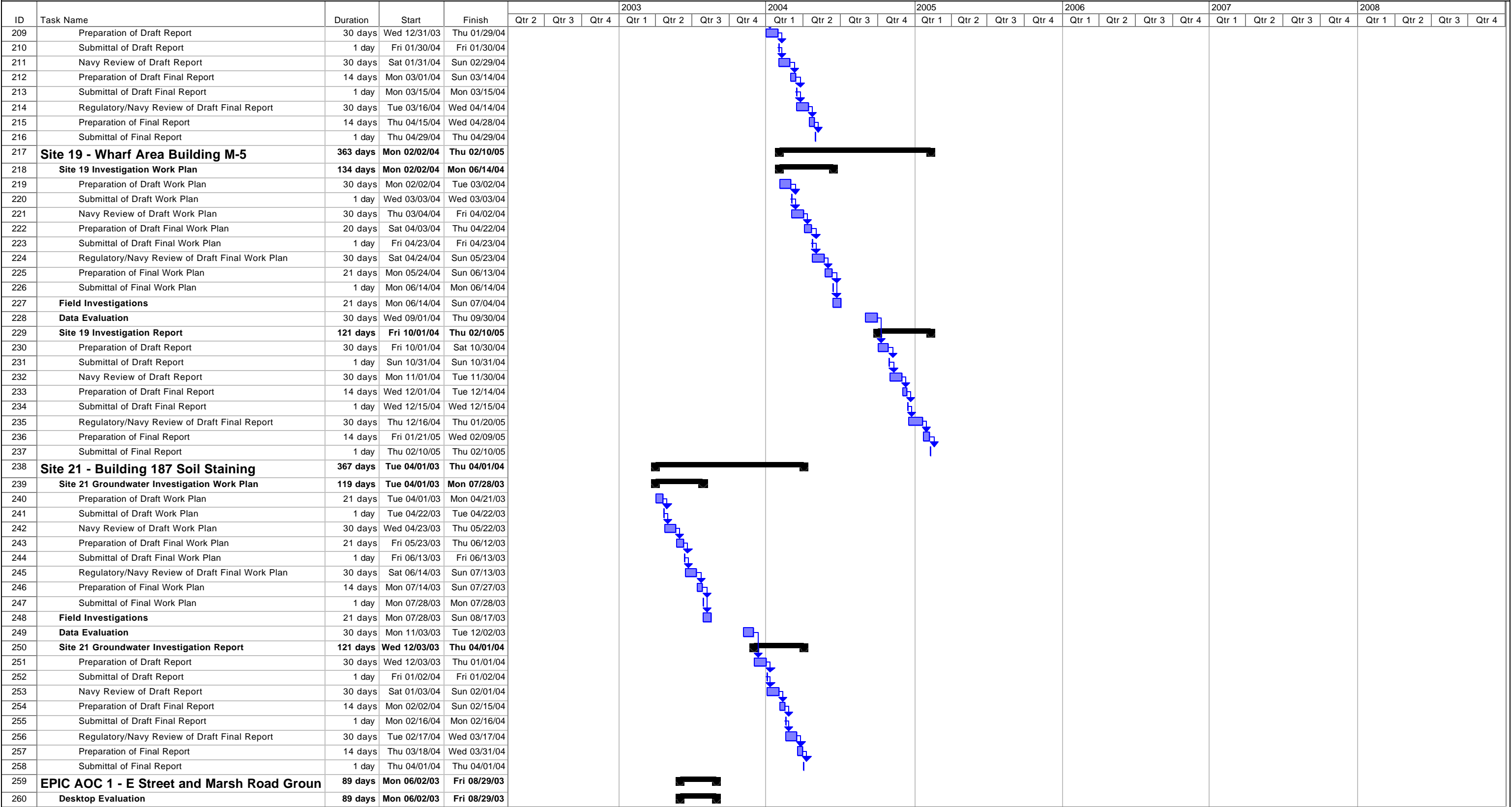
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Figure 4-1
St Juliens Creek Annex Schedule of IR Activities for Fiscal Years 2003 through 2008
Site Management Plan
St. Juliens Creek Annex



Project: Figure 4-1
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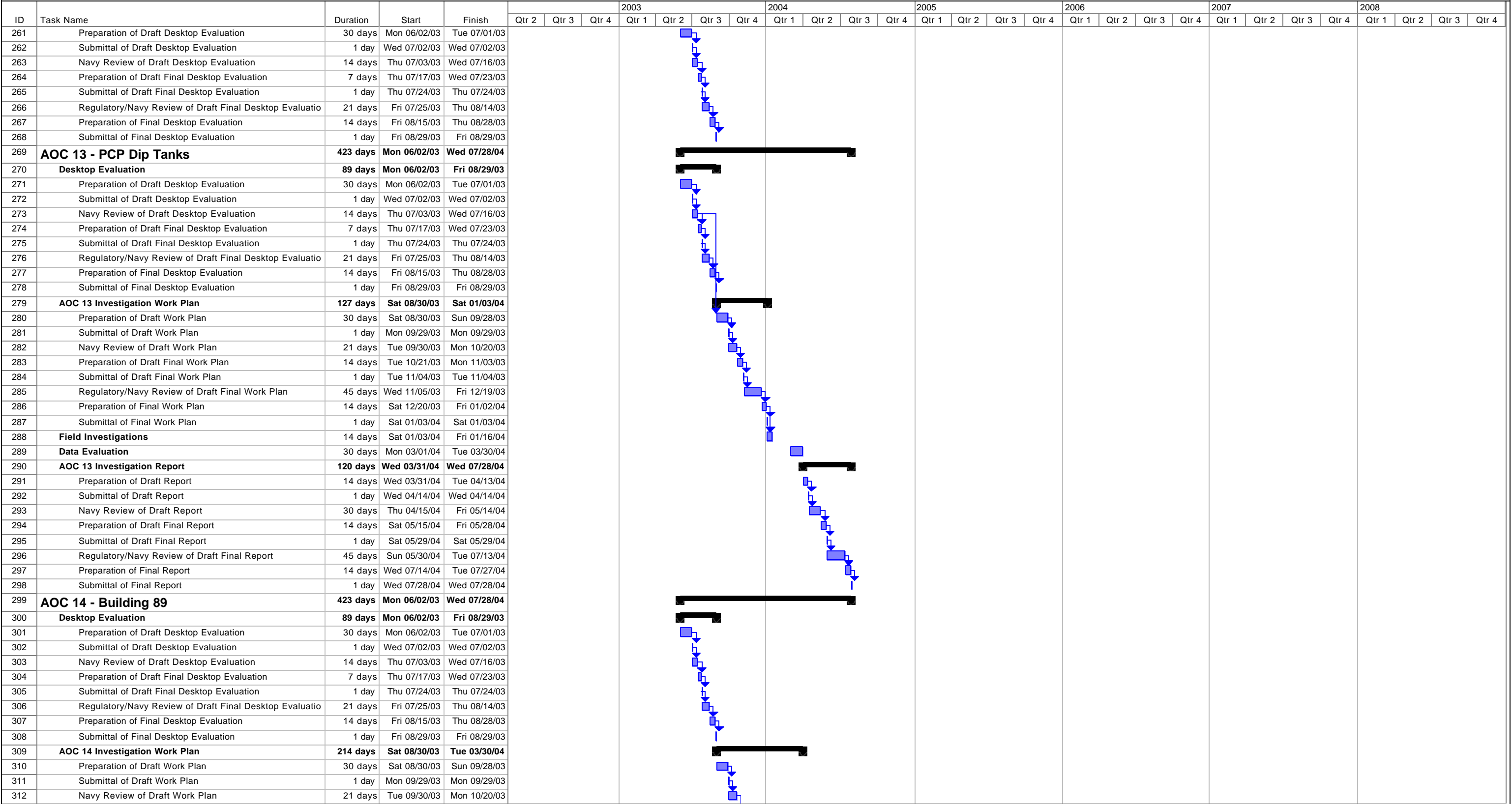
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Figure 4-1
St Juliens Creek Annex Schedule of IR Activities for Fiscal Years 2003 through 2008
Site Management Plan
St. Juliens Creek Annex



Project: Figure 4-1
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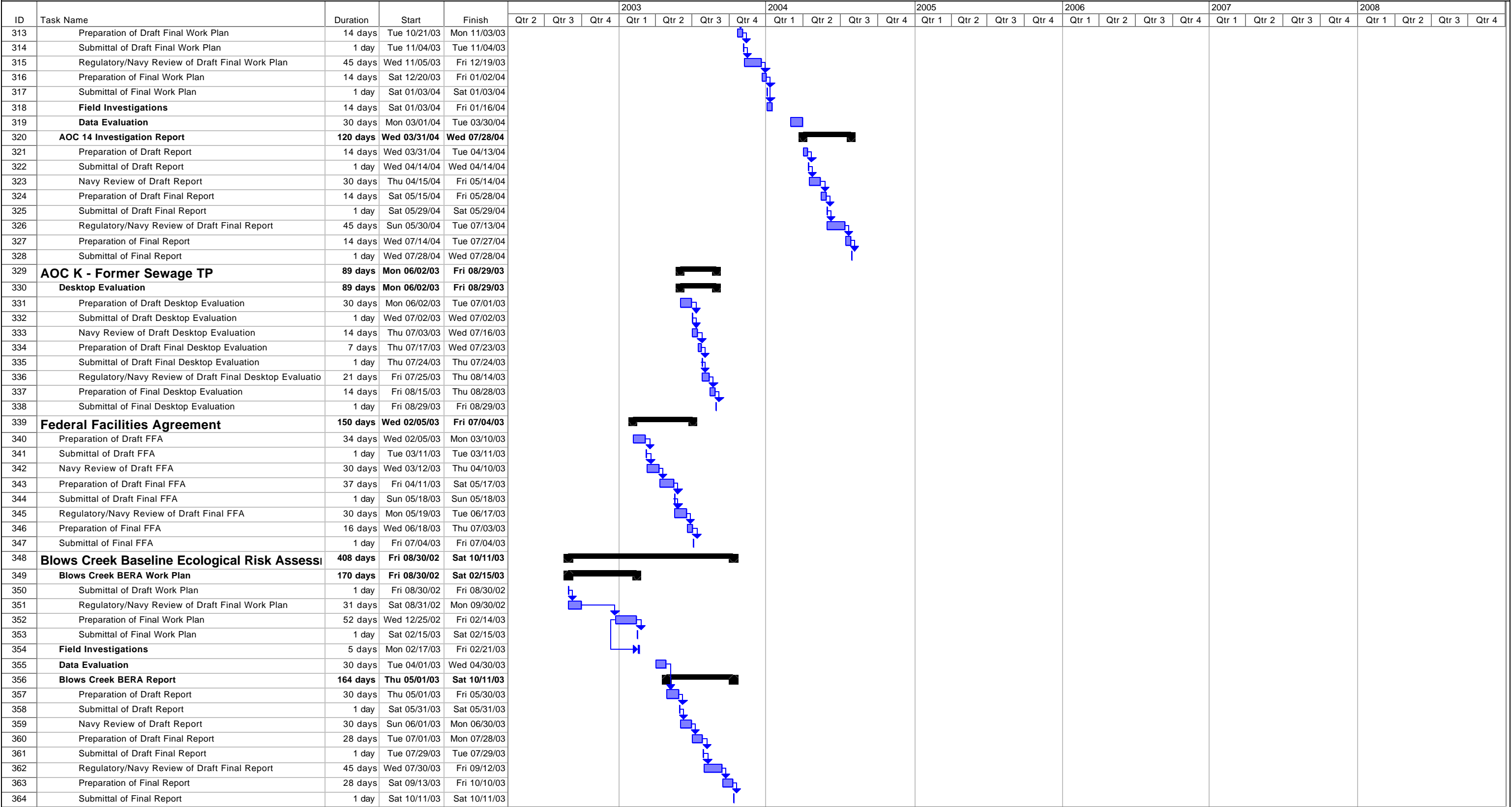
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Figure 4-1
St Juliens Creek Annex Schedule of IR Activities for Fiscal Years 2003 through 2008
Site Management Plan
St. Juliens Creek Annex



Project: Figure 4-1
Date: Tue 01/28/03

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Project Summary

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5 Planned and Proposed Remedial Actions and Removal Actions

Remedial Actions (RAs) are conducted to prevent a potential release of contaminants and/or further migration of contaminants. Removal actions are taken to prevent immediate and substantial harm to human health. Examples include the removal of drums or tanks, or removal of contaminated soils.

Planned and proposed remedial and removal actions that have been conducted or identified at SJCA sites are presented below, listed according to site. With the exception of removal actions associated with facility construction projects, no historic remedial actions or removal actions under CERCLA have taken place at any SJCA IR sites or AOCs. The Navy will continue to identify possible remedial and removal actions as investigation activities proceed.

5.1 Site 3—Waste Disposal Area C

A removal action was implemented at Site 3 in the last quarter of FY 2002 to remove waste debris, burnt/stained soil and drainage channel sediment that may pose a risk to humans health and the environment. Due to funding limitations, completion of removal activities at Site 3 will occur during FY 2003. An EE/CA has been finalized in preparation for the removal action.

The removal action will include excavation, characterization (including UXO screening and removal), and disposal of excavated waste/debris as well as soil and drainage sediment. Following complete removal of waste and media posing a potential risk, the land comprising Site 3 will have unrestricted use.

5.2 Site 6—Small Items Pit

A removal action was implemented and completed in the last quarter of FY 2002 at Site 6 at the same time as the Site 3 removal action. The NTCRA removed contaminated soil and any remnants of the caged pit during excavation activities at Site 6. An EE/CA has been finalized in preparation for the removal action.

The removal action included excavation, characterization (including UXO screening and removal), and disposal of excavated waste/debris as well as soil. Following the complete removal of waste and media posing a potential risk, the land comprising Site 6 will have unrestricted use.

The preparation of a PRAP and ROD are planned for FY 2003.

5.3 Site 7—Old Storage Yard

Though the site is NFA under CERCLA, surface debris has historically been stored on site. The surface debris at Site 7 was removed in the 4th quarter of FY 2002. A report detailing the removal of surface debris will be produced in 2nd quarter of FY 2003.

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